Designer Manual

List & Label® 21

Full-powered Reporting Functionality

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1. Introduction

With the Designer, you create or edit different print templates for printing information that originates either from a database or another data source. In the Designer, you then have all the data at your disposal and can prepare it for printing in different ways.

The Designer always uses the data that is passed from the program, in other words, the application handles the process of selecting and compiling the data.

Thus, "the Designer" is not a self-contained application, but rather is incorporated in an inherent part of an application.

The Designer – the print, preview and export dialog – is normally started via a menu item (e.g. Configuration > Print or Output > Print).

1.1 General

The different print templates are referred to as "Projects". Along with the actual print information, a project also contains, above all, layout specifications such as page size and orientation, fonts, colors, frames, circles, lines, graphics etc. The Designer can handle three different types of projects: Lists, labels and cards.

The individual elements of such a project are called "objects". For example, a project can contain text objects, picture objects and a report container.

The required objects are normally selected in the object list, created on the workspace with the mouse and then given the respective contents and layout properties.

The Designer provides different types of objects which you can position freely in the workspace and change the size as required.

- Text and contents of variables
- Lines
- Rectangles
- Circles and ellipses
- Picture object
- Barcode
- Report container or Table object (depending on the application): The Report containers can hold tables, charts, crosstabs and Gantt charts.
- Charts: Schematic view of data.
- Crosstabs: For presenting data in multiple dimensions.
- Formatted text: For changing the formatting within a line.
- Form elements: For entering data in the preview and PDF format.

- Data Graphic: For simple visualization of data as a bar or symbol.
- Gauge: For visualization of data as gauge or scale.
- HTML content: For embedding HTML pages.
- PDF: For embedding PDF documents.
- OLE container. For linking OLE documents (e.g. Word, Excel).
- Form templates are placed in the background of the workspace as a template so that other objects can be aligned to them.

1.2 Screen

The Designer interface consists of a workspace and different tool windows.

- A Ribbon with the particular available functions respectively the toolbars "Objects" and "Actions". You can select the display type (ribbon or toolbar) in the project options (File > Options > Workspace). This manual names the commands in the Ribbon and the corresponding menu option in brackets.

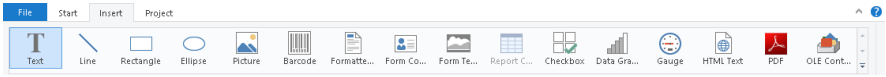

Figure 1.1: The Ribbon

The ribbon can be hidden by double clicking on the tab. The blue button in the top left is described as "File". The File menu contains commands for saving and using the print project.

- The objects are placed in the workspace. You change the shape and size of the workspace via **Project > Page Setup**.
- You can select the viewing mode by means of the tabs at the workspace borders: Layout, Layout Preview, Preview.
- The status bar with the current mouse position, the current operation, the position/size and the Zoom Slider.
- Tool windows for the available variables and fields (Variables-/Field-List), the objects and elements of the report container, the different display layers (Layers) and the properties of the selected object or project (Properties).

2. Getting Started

This chapter describes how to create a simple list based on the combit Sample Application.

If you use List & Label as part of an application, you can usually start the Designer via a menu item or similar. The functionality can differ slightly from the description below.

2.1 The Examples in this manual

The Designer is not available as a self-contained application, but rather is incorporated in List & Label as an inherent part of an application. For this reason, a Sample Application is used to create the examples for this manual.

This Sample Application contains a Microsoft Access Database for a fictitious company called "Northwind" with sample data for a food wholesaler.

It is a relational database meaning that the data is distributed across several tables. Each table contains data elements that are related to one another. For instance, one table contains the product data. Another contains the product categories. A table's columns are referred to as fields (product name), and the rows of a table as data records.

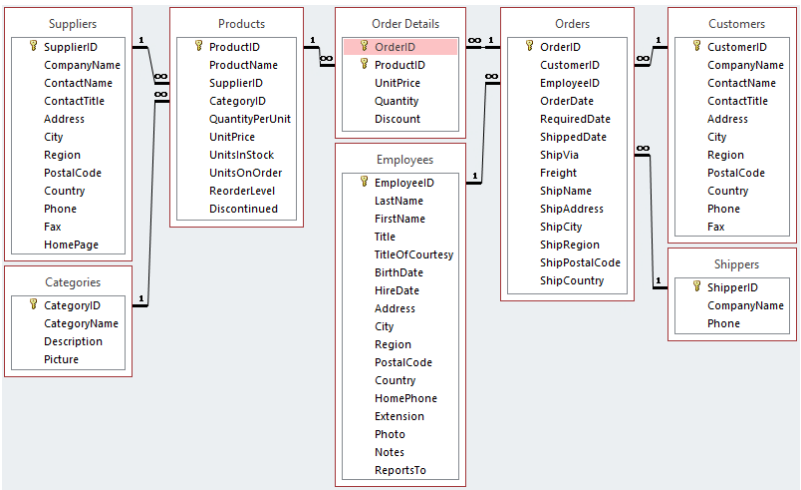

Figure 2.1: Structure of the Microsoft Northwind sample database

2.2 Creating a Simple Report

For a first simple report, you will produce a product list in alphabetical order with a report title and a company logo.

1. Start the Designer.
2. A file selection dialog will appear. To start a new project, choose the New button.

   Note: This button is not available in Windows XP. Enter a name for the new print template in the "File name" field and then choose "Open".

   To open or edit an existing project, choose **Open.**

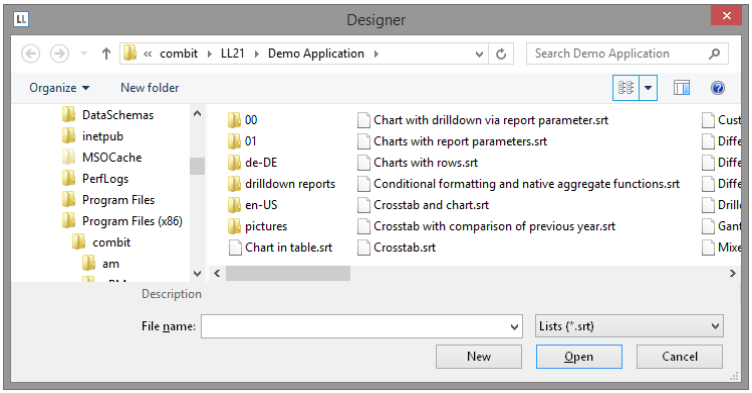

Figure 2.2: Open dialog

3. The standard project for the respective project type is displayed. This standard project is normally an empty workspace with a certain paper size and alignment.

   With label projects, a certain label format (size and arrangement of the individual labels on the sheet) is already specified as a default value.

   Note: A standard project is a standard template for creating projects. However, you can change it to suit your needs and save it again under the name "Default".

4. If you have chosen "New project wizard" under File > Options > Workspace the project wizard will start. The project wizard simplifies the job of creating new projects by leading you through different page setup options. We don´t use the wizard for this example.

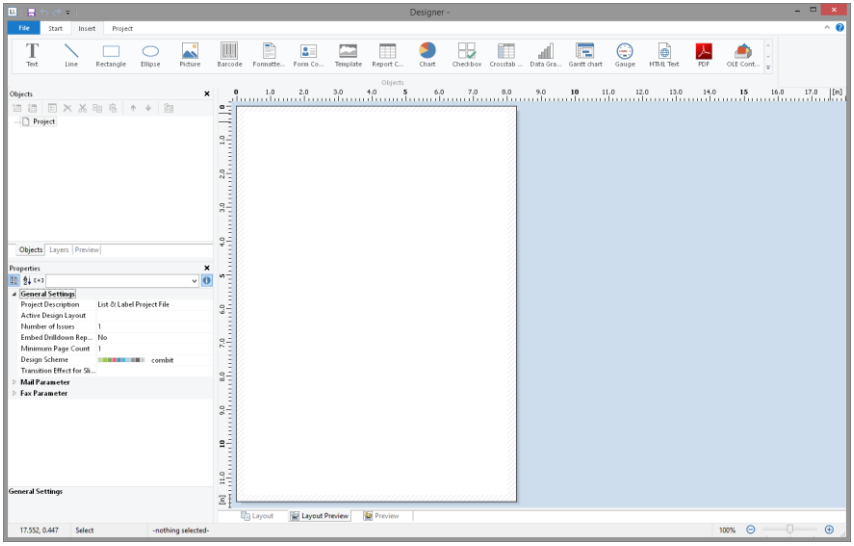

Figure 2.3: Empty workspace

2.2.1 Inserting a Company Logo into the Report

For the company logo, please use the "sunshine.gif" file, which you will find in the directory for the Sample Application. We also need a "Picture" object. Proceed as follows:

1. Choose Insert > Picture (Objects > Insert > Picture).

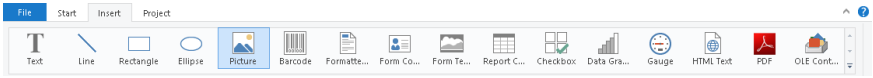

Figure 2.4: Tab "Insert"

> **Note:** Objects are your project's building blocks. They are generated in the workspace where they are also given a border with which their size and position can be changed. This border defines the space that the object takes up and thus also the maximum size to which the contents of the respective object can be expanded. Objects may overlap fully or partly.

2. In the workspace, point the mouse to the position where the upper left corner of the object is to begin. The mouse cursor changes to a crosshair. Hold down the left mouse button and drag the crosshair to the lower right corner of the planned object. Release the mouse button when the object (the dashed border) is the right size.

Note: Objects can be added to the workspace in different ways: via the menu **Objects > Insert**, via the toolbar or via keyboard shortcuts, or with Drag & Drop from the list of variables.

3. Select if the picture is loaded from a file or if the content is defined by a formula/variable.

Note: This dialog is not available in Windows XP, the file selection dialog will appear directly.

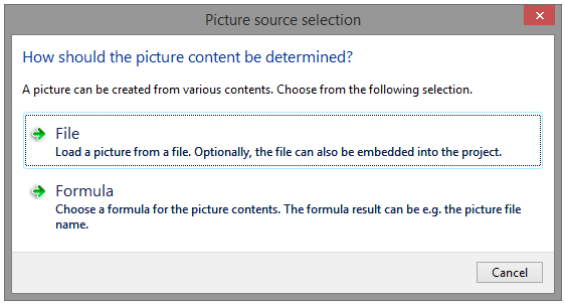

Figure 2.5: Picture source selection

4. If you select File, a file selection dialog will appear. Select the image file.

Note: The following formats are available: WMF, EMF, BMP, DIB, PCX, SCR, TIFF, GIF, JPEG, PCD, PNG and ICO. As a general rule, you should use the RGB color space (not CYMK). Transparency in PNG files is supported by using the corresponding Windows functions. In our experience the majority of printer drivers do not support transparency so that reports with e.g. partly transparent PNG files should thoroughly be tested on the actual hard-software combination. If that is not possible we recommend doing without the alpha channel.

In addition, you can insert the picture into the project by enabling the ("**Embed image in project file**" checkbox option. This option copies the image to the project thus making it available even without the external file.

5. After you select the file, the logo will be inserted.

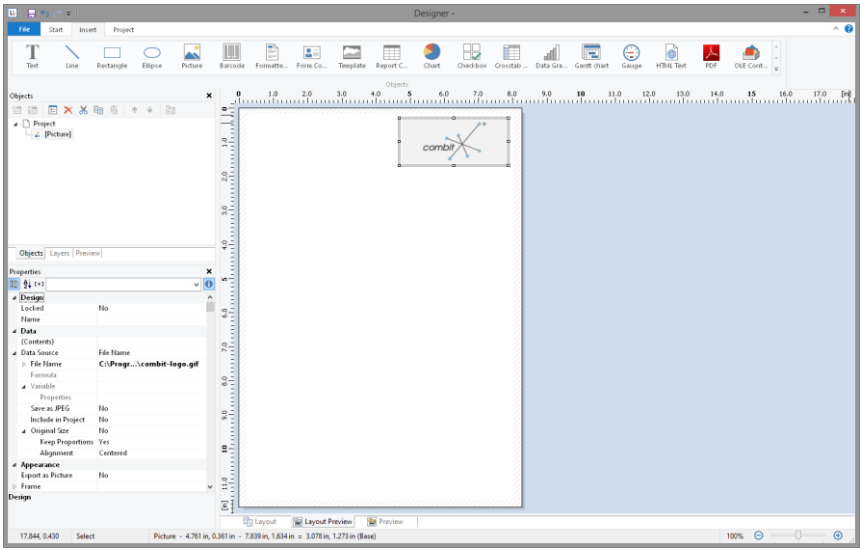

Figure 2.6: Report with picture object

2.2.2 Adding a Title to the Report

Use a text object to add a title to the report. Text objects let you place text in the workspace. As well as fixed text, you can also insert the contents of fields (variables) from the database (e.g. company name), or you can use functions (page number, date etc.).

1. Choose Insert > Text (Objects > Insert > Text).

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   Figure 2.7: Tab "Insert"

2. In the workspace, hold down the left mouse button and pull the object to the required size. Text objects should always be created in the maximum size you want, the object shrinks at print time to the required size.
3. The formula wizard will now appear which you can use to define the contents of the text object.

   This dialog consists of a series of tabs each containing different elements to be edited. The following chapters explain the meanings of these elements in more detail.

   - Data and Functions: the available variables, fields and functions.
   - Condition: for defining IF-THEN-ELSE conditions.
   - Text: for entering fixed text and tabs.
   - Date Format: different date formats.
   - Number Format: different number formats.

- Operators: available conjunction operators.

You can also enter the expression that you want directly in the edit box or modify the text that is there (e.g. put something in brackets).

Therefore, enter our title "Products" directly. Fixed text must be enclosed in quotation marks. Enter names of data and functions without brackets.

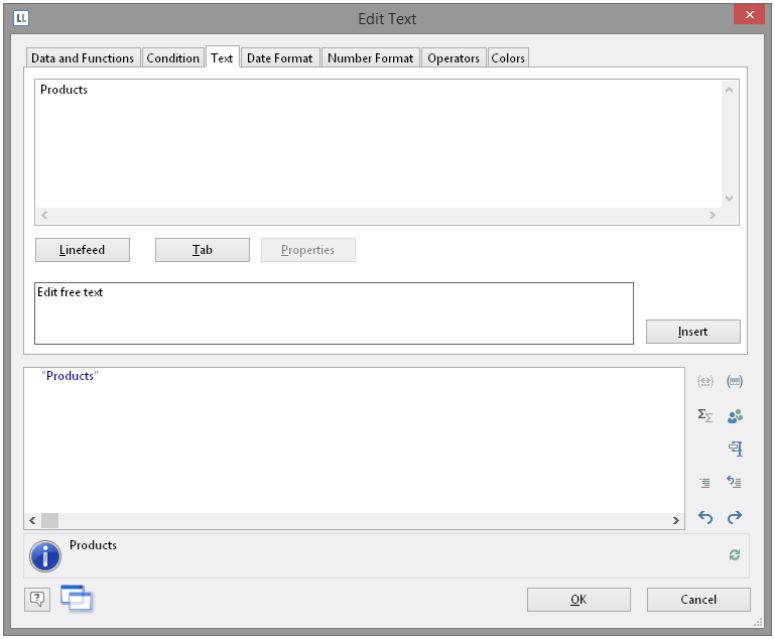


Figure 2.8: Text in the formula wizard

Note: Please note that there are two ways of writing expressions, depending on their use. You will find more information about this in the chapter "Variables, Fields and Expressions".

4. The title will be displayed when you close the dialog with OK.
5. Use the Tab Texttools > Text (mini-toolbar) to enlarge the font size.
6. You have now added the title:

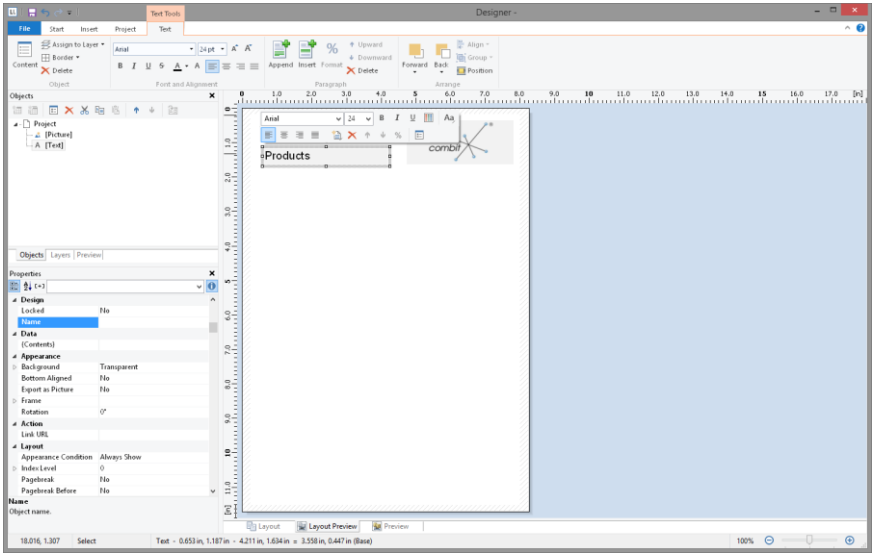


Figure 2.9: Report with text object

2.2.3 Insert the Table for the Product List

Use the "Report Container" object to add a table to the report. As the name says, a report container can hold several objects: tables, charts and crosstabs can be added in any order.

Note: The report container is not available in all applications. In applications that don't have the report container, use the "Table" object.

1. Choose Insert > Report Container (Objects > Insert > Report Container).

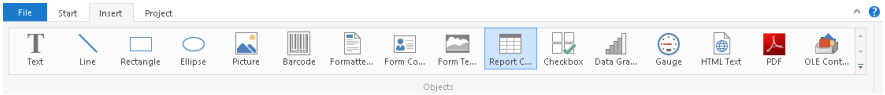


Figure 2.10: Tab "Insert"

2. In the workspace, hold down the left mouse button and pull the object to the required size.
3. A selection dialog will appear for the chosen element type. Choose the "Table" element type.

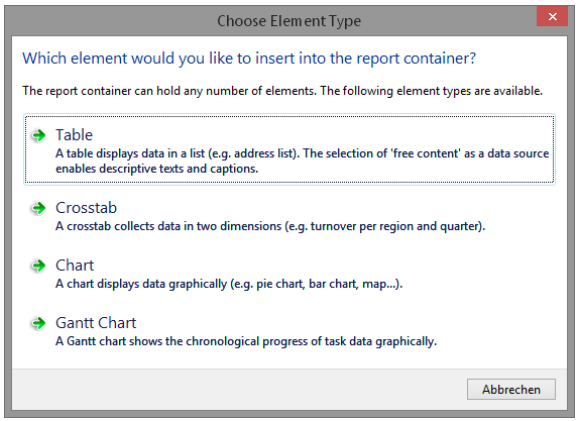


Figure 2.11: Choosing the object type

4. Now supply the data source in the following dialog. All available tables are shown hierarchically; in other words, under the tables, you will find the relational tables in each case.

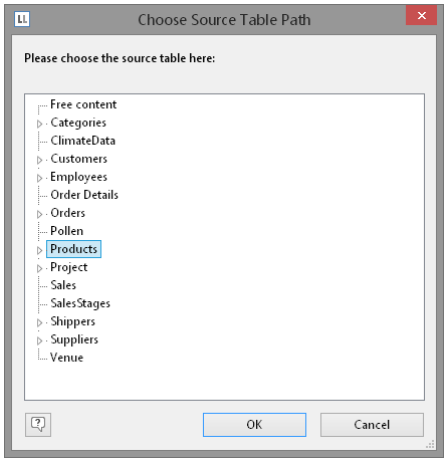


Figure 2.12: Choosing the data source

Select the "Products" table because it contains the fields that we want for our product list.

5. A selection wizard will appear with all the fields in the "Products" table. In addition, underneath the "Products" table, you will also find the fields in the tables "Categories" and "Suppliers" which have a 1:1.relationship with "Products".

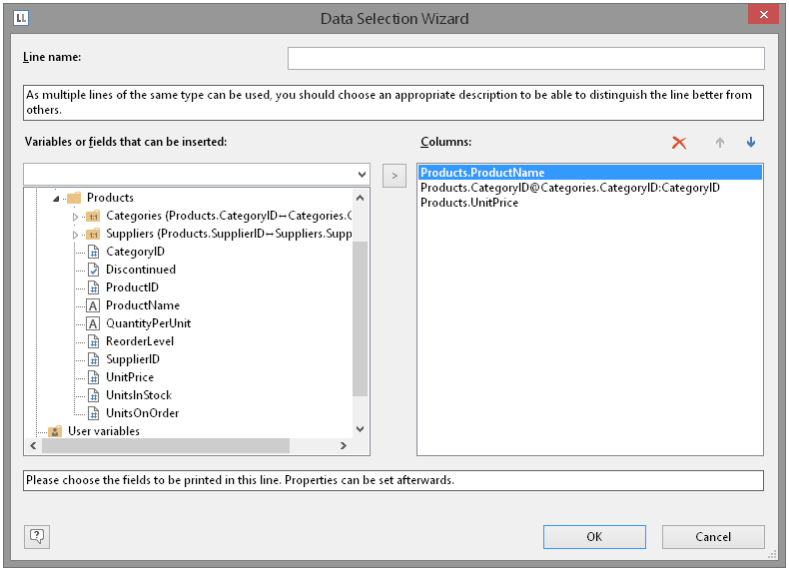


Figure 2.13: Data Selection Wizard

In this dialog, now choose the columns for the table. Double-click a field, e.g. "ProductName". The field will be added to the "Columns" area.

6. Repeat this step for all fields that are to be shown in the table; i.e. also the "CategoryName" field from the linked table "Categories" and the "UnitPrice" field for the unit price. Confirm your selection with OK.
7. The table will now be displayed in the workspace.
   - The selected fields are displayed in the data line, in other words, the data line contains the data.
   - In addition, a header line is automatically produced. Header lines are used mostly as column titles, i.e. the selected field names are now shown here as text.
   - If you pull the report container widthwise to make it wider or narrower while holding down the CTRL key, the columns will be adjusted proportionally to fit.
   - The width of the columns adjusts automatically. You can adjust the width of a column manually by moving the separating line to the right or the left with the mouse.

   Note: This changes all table columns, whose separators are within +/-2 mm from the mouse position. If you hold down the CTRL key, the action will only be carried out for the line on which the mouse is positioned. If the option "Change width individually" is enabled (Table> Lines and Columns or

CTRL+M or project option "Column width modification affects next column"), you can alter the column width while making the next column smaller.

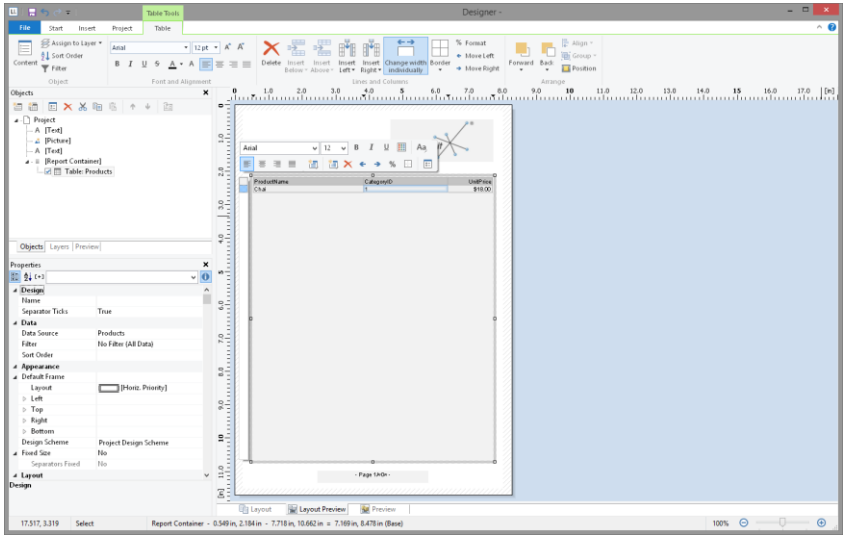


Figure 2.14: Report with table in the report container object

2.2.4 Formatting Table Fields

Chapter "Creating Professional Tables" describes how you can format and modify a table. Only a few basic formatting options are explained here.

1. In the product category column title, the field name "CategoryName" is shown. Click the respective field in order to change this text to "Category". The formula wizard will now appear, which you can use to change the contents of the field. Please consider that text must be enclosed in quotation marks.

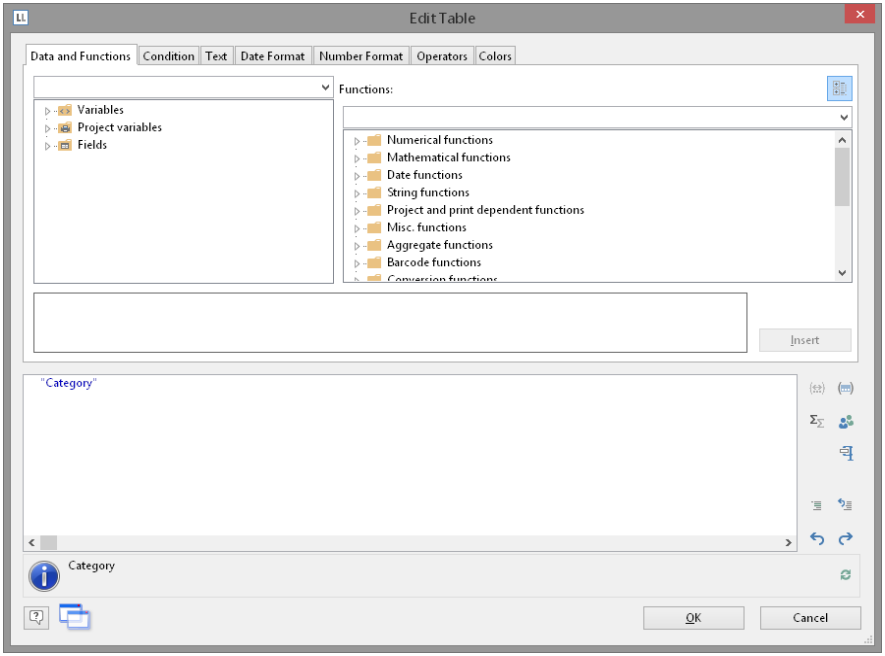


Figure 2.15: Formula wizard with text input

2. In addition, we want to format the unit price as currency and align the entire column to the right. You will find both formatting options in the tab Table Tools > Table (mini-toolbar). Click in the upper left corner to select the field containing the unit price.

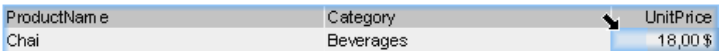


Figure 2.16: Selecting a single field

3. Click the button "% Format" for the formatting dialog
4. A selection dialog will now appear in which you can select the formatting that you want for the numeric field. To do this, choose the type on the left hand side i.e. "Currency". In the right pane, you can specify the currency formatting in detail. The settings for the relevant application will be used in each case as standard. Alternatively, you can choose the system setting or a user defined setting.

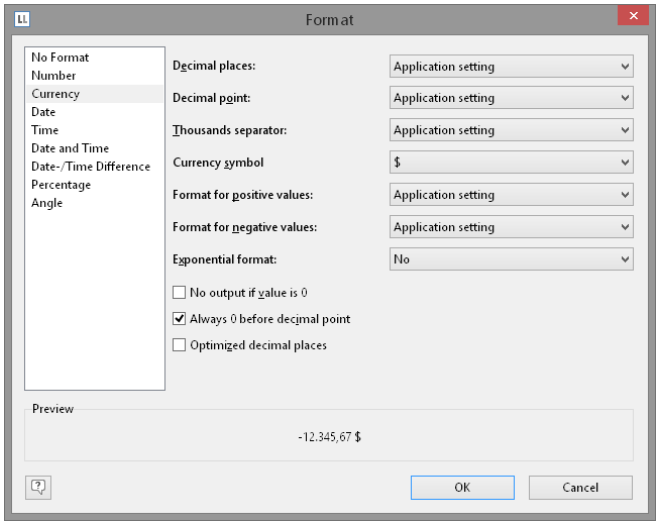


Figure 2.17: Formatting dialog

5. Finally, select both fields (the header and the data line) to align them to the right. To do this, hold down the CTRL key and select both fields by clicking in the upper left corner in each case. Then click the button for right alignment.

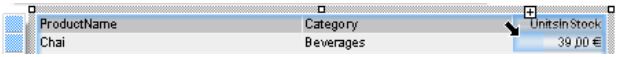


Figure 2.18: Multiple field selection

2.2.5 Displaying a Preview of the Report

Until now, you have only seen the report in layout view as a structure with a record. To get an impression of the result, you can display a preview of the report. Use the tabs in the bottom margin of the workspace to change to the preview.

Note: Real data preview mode is not supported by all applications.

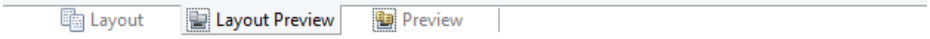


Figure 2.19: "Preview Options" toolbar

The report will now be displayed with the data from the "Products" table. You can also change the number of "products" or data records in the Sample Application.

1. To do this, save the report with File > Save.
2. End the Designer with File > Close.
3. In the Sample Application, choose Options > Settings and increase the maximum number of root records to 50.

4. Open the print template that you created again via Design > Extended Samples, and switch to preview mode. Your report will look roughly like this:

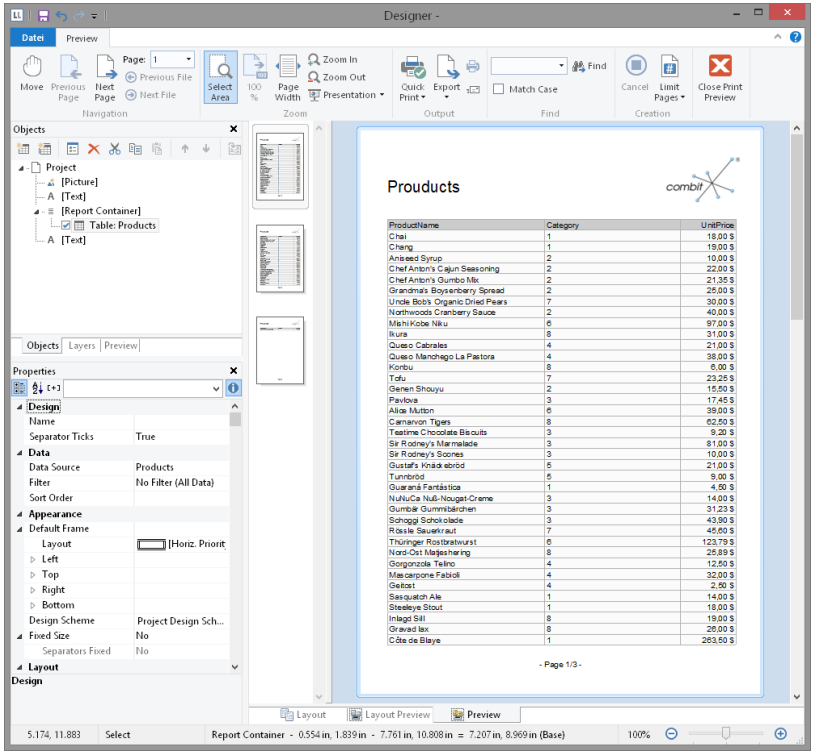


Figure 2.20: Real data preview

2.2.6 Adding a Page Number

It's a good idea to add a page number in the lower area of the page. To do this, add a new text object. You will be using functions (such as the page number function) as well as fixed text with this object.

1. Choose Insert > Text (Objects > Insert > Text).

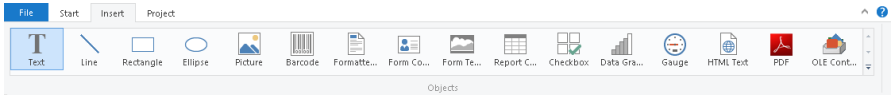


Figure 2.21: Tab "Insert"

2. In the workspace, hold down the left mouse button and pull the object to the required size.
3. The formula wizard will now appear which you can use to define the contents of the text object. The available functions are shown in the right pane. You can use

an auto filter with this list. Type "page" in the filter field. This will cause all functions containing the expression "page" to be displayed.

- The "Page$ ()" function returns the page number.
- The "TotalPage$ ()" function returns the total number of pages.

Add the "Page$ ()" function to the result area by double-clicking.

4. If you now want to output a footer in the form of "Page 1 of 2", you can enter the text "of" directly in the usual way. Please consider that individual parts must be joined with a "+" and that text must be enclosed in quotation marks.
5. Now add the "TotalPages$ ()" function by double-clicking to get the total number pages. The formula will look like this:

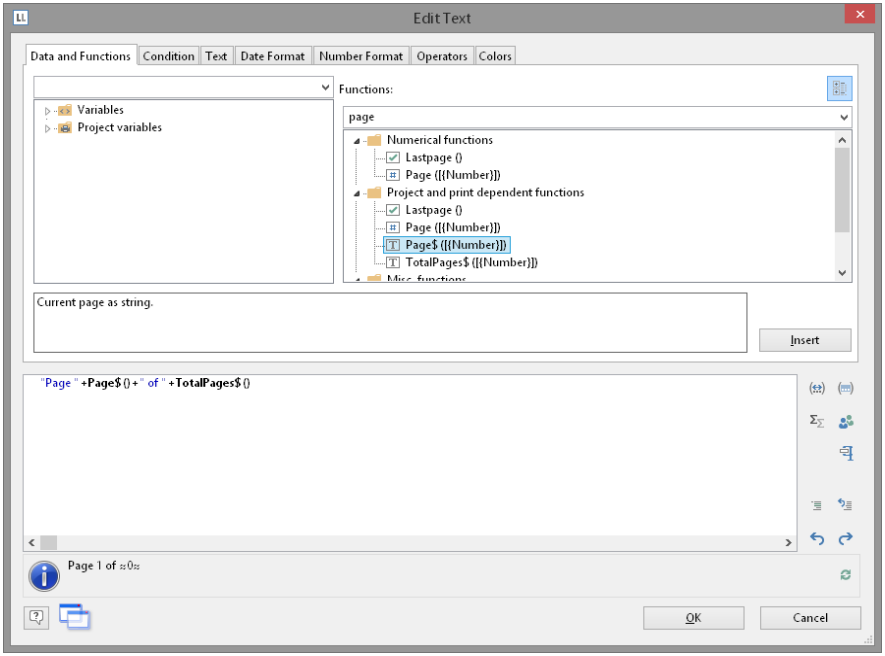


Figure 2.22: Formula wizard with functions and text

6. You can center this line in the report in the usual way:

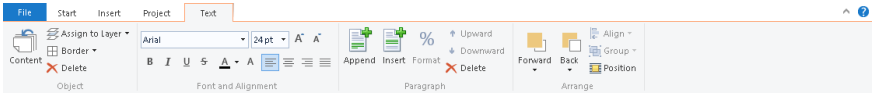


Figure 2.23: Quick format "centered" alignment

7. Switch to preview mode to view the result:

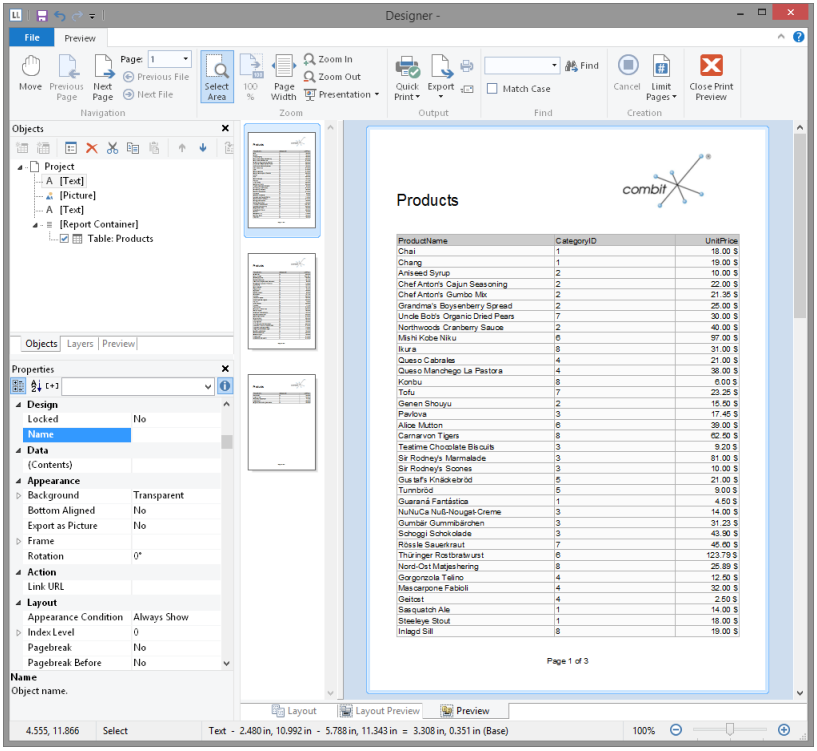


Figure 2.24: Real data preview in the Designer

2.2.7 Print the Report

You can start the print function directly from the higher-level program, from the real data preview or via **File > Print**.

1. The Print Options dialog will appear.
   - Under "**Print target**", you can change the printer or the printer configuration.
   - Select the output format (e.g. preview, printer, Excel) under "**Direct to**".

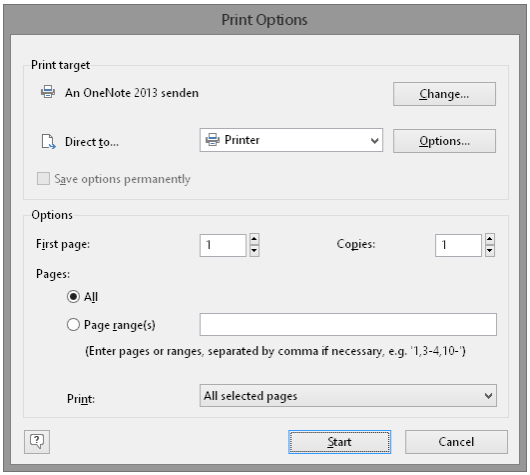


Figure 2.25: Output options

2. If you have selected an export format (such as PDF), choose the storage location in the following "Save As" dialog and enter a name for the file to be created in the "File name" field.

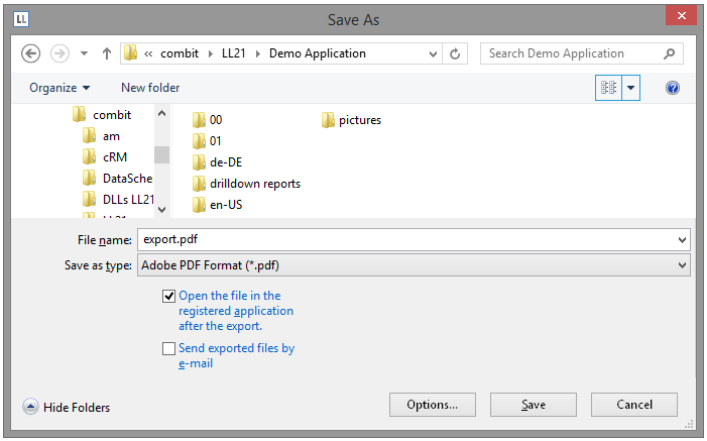


Figure 2.26: Save dialog when exporting to a different format

2.3 Creating a Simple Invoice

In this chapter, you will now meet functions and possibilities for designing reports.

For the next example, you will create a multi-page invoice with covering letter, invoice header, totals, footers, enclosure and printed copy.

2.3.1 Create a New Print Template

1. Start the Designer.
2. A file selection dialog will appear. To start a new project, choose the New button.

   Note: This button is not available in Windows XP. Enter a name for the new print template in the "File name" field and then choose "Open".

   To open or edit an existing project, choose **Open**.

2.3.2 Adding a Company Logo

Use the picture object to add a logo.

1. Choose Insert > Picture (Objects > Insert > Picture).

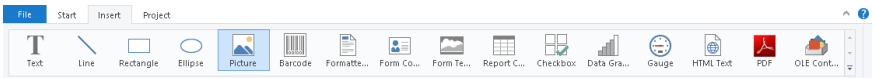


Figure 2.27: Tab "Insert"

2. Pull the object to the right size and select an image file (see Chapter "Inserting a Company Logo into the Report").

2.3.3 Add the Address Field

To add an address, use the text object. Text objects let you place text or the contents of fields in the workspace.

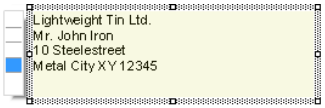


Figure 2.28: Address field: it should look like this.

1. Choose Insert > Text (Objects > Insert > Text).

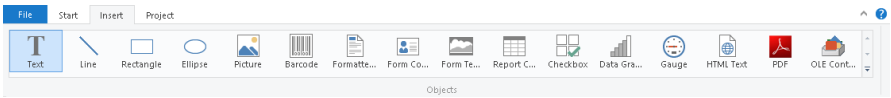


Figure 2.29: Tab "Insert"

2. Pull the object to the required size. Text objects should always be created in the maximum size you want, the object shrinks at print time to the required size.
3. The formula wizard will now appear which you can use to define the contents of the text object.

   This dialog consists of a series of tabs. On the "Data and Functions" tab, select the variable for the company address (company) from the list of available variables and fields.

You will see an auto filter field above the list of data. This means that you can enter "Company" to display all fields and variables containing this expression. Select the variable that you want by double-clicking and confirm your selection with OK. You have now defined the first line of the address field.

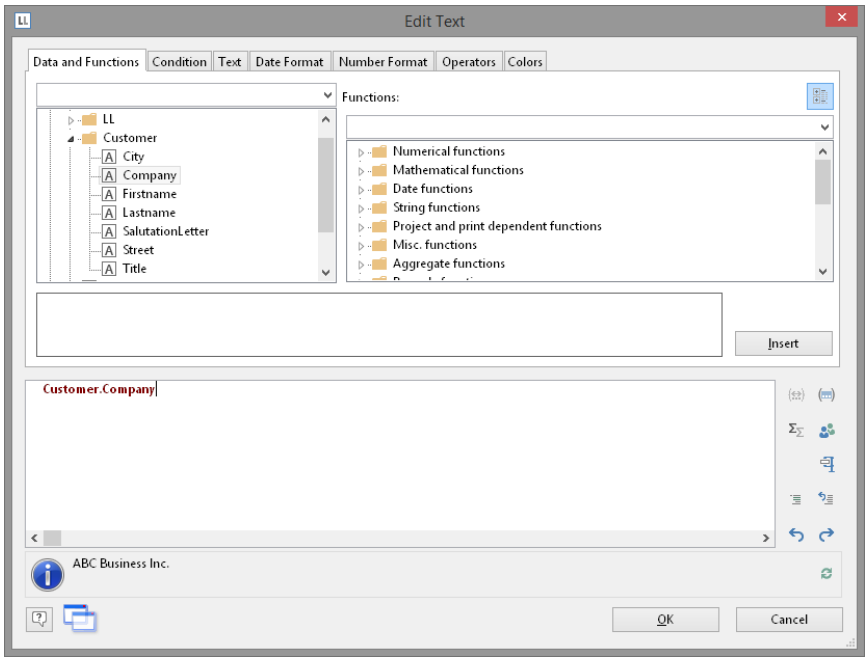


Figure 2.30: Formula wizard with variable

4. A text object can hold as many paragraphs as you want and they can all have completely different display properties. You can add more paragraphs by means of the tab Text Tools > Text (mini-toolbar). Choose "Append" to define an additional line.

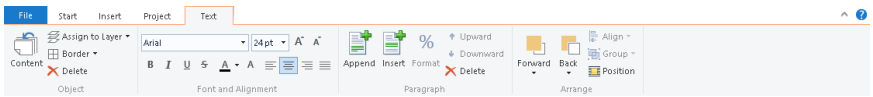


Figure 2.31: The Tab Tools-Tab "Text"

5. The formula wizard will now appear, which you can use to define the contents of the paragraph. Now enter the first name and the last name of the recipient. First choose the "Firstname" variable.
6. You should insert a space before choosing the "Lastname" variable to prevent the contents of the two variables from being placed end to end. A space is simply "Text". Fixed text must be enclosed in quotation marks. So now enter "+" as a joining operator followed by " " for the space.

7. Now select the "Lastname" variable. You must naturally also join this with "+". The whole line looks like this:

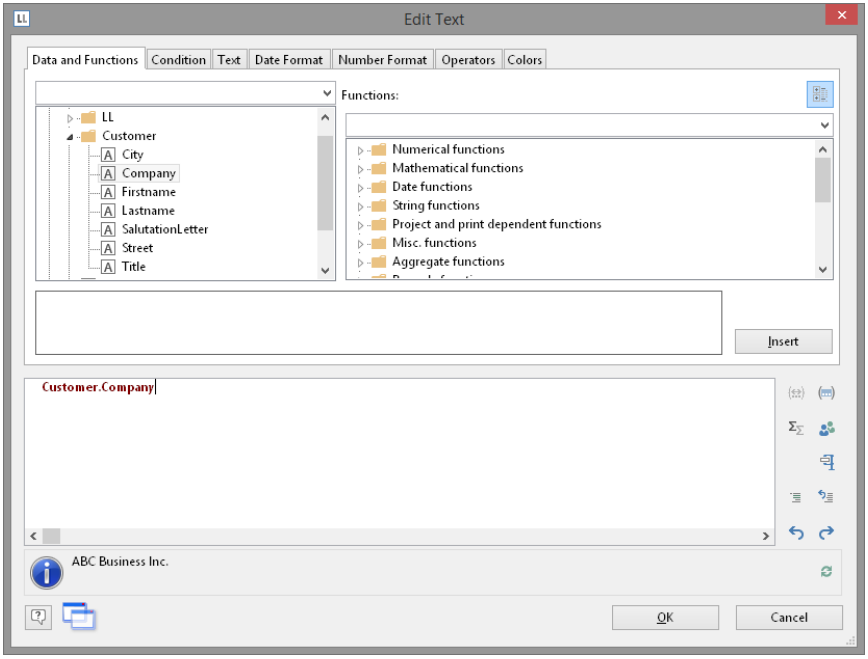


Figure 2.32: Linking variables and text

8. Now continue with the other variables: street and city. You have now completed the address field.

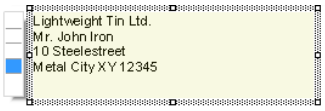


Figure 2.33: Text field with 4 paragraphs

2.3.4 Create Invoice Header With Number and Date

Use the text object again to add the text "Invoice", the invoice date and the invoice number to an invoice header.

Figure 2.34: Invoice header: it should look like this.

1. Choose Insert > Text (Objects > Insert > Text).
2. Pull the object to the required size.
3. The formula wizard will now appear, which you can use to define the contents of the text object. Type "Invoice".
4. Add another paragraph by means of the tab Text Tools > Text (mini-toolbar) and the "Append" button.
5. The formula wizard will appear. Type "Date".
6. Before you enter the invoice date, insert a tab stop so that the invoice date is aligned to the right. You can insert a tab stop by means of the "Text" tab.

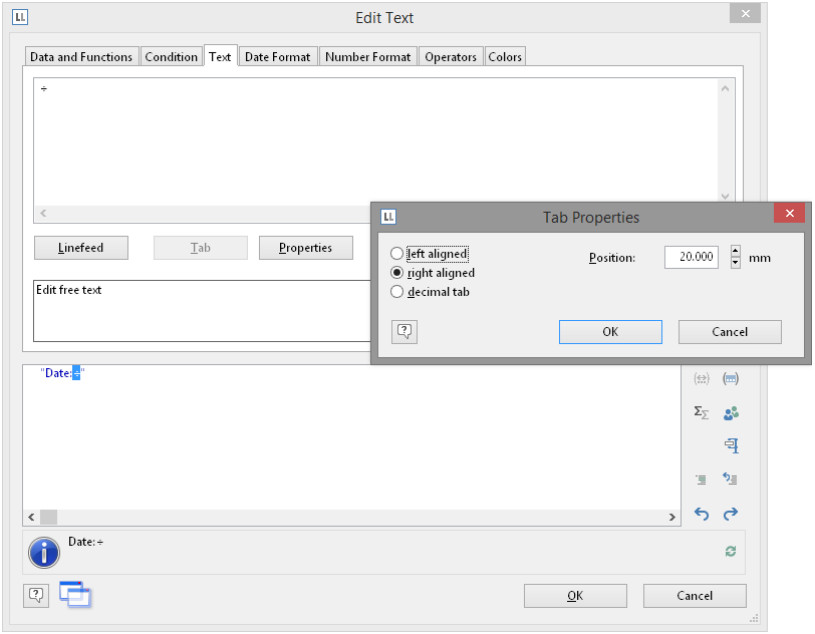


Figure 2.35: Adding a tab stop to a text expression

7. You create a tab stop with the "Tab" button and you define the position and alignment with the "Properties" button.

   Note: Only *one* tab stop can be inserted on each line. A tab stop causes the preceding text to run only as far as the tab stop. A tab stop that is right aligned will cause the text that follows it to be justified to the right. The distance from the left margin determines the position of the tab stop.

   Since a tab stop is also a character, it must also be enclosed in quotation marks. Alternatively, in this example, you can insert the tab stop with "Insert" to the existing "Invoice date" text.

8. Finally, position the cursor outside of the text field and insert the "Invoice_Date" variable with the "Data and Functions" tab.

   The format will be converted automatically.

   Conversion with the "Date$()" function is essential since the invoice date has the "date" type and the value that is returned is already defined as a "string" by the "Invoice date" text expression entered earlier. The return value must always be unique. The date value must therefore be converted to a string by means of a function. The "Date$()" function is one way of doing this.

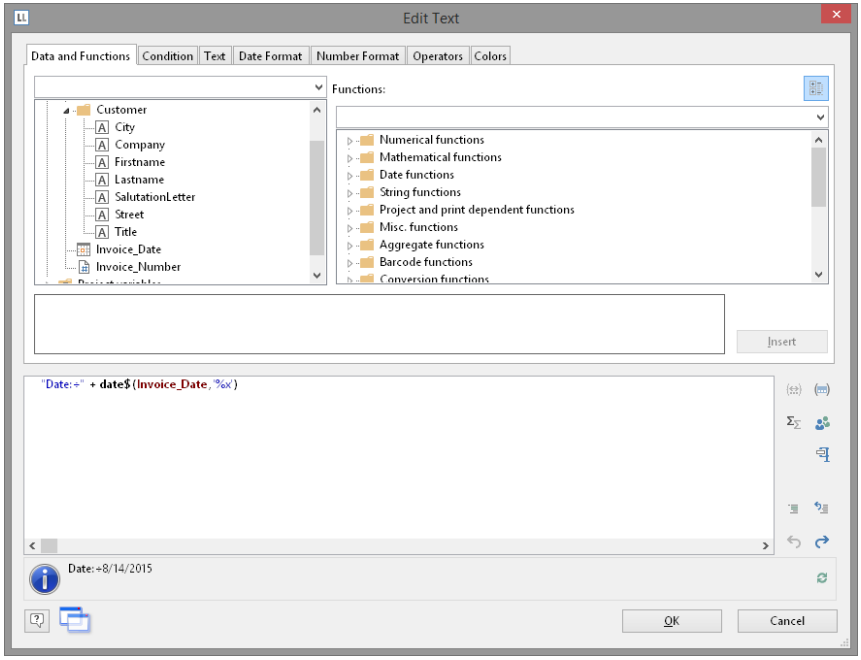


Figure 2.36: Format conversion with Date$()

The automatic format conversion uses "%x" as the formatting parameter. If you want a different output format, switch to the "Date Format" tab. You can choose a format here and then select the "Invoice_Date" variable.

9. Now add the invoice number in the same way.

   The format will be converted automatically here as well.

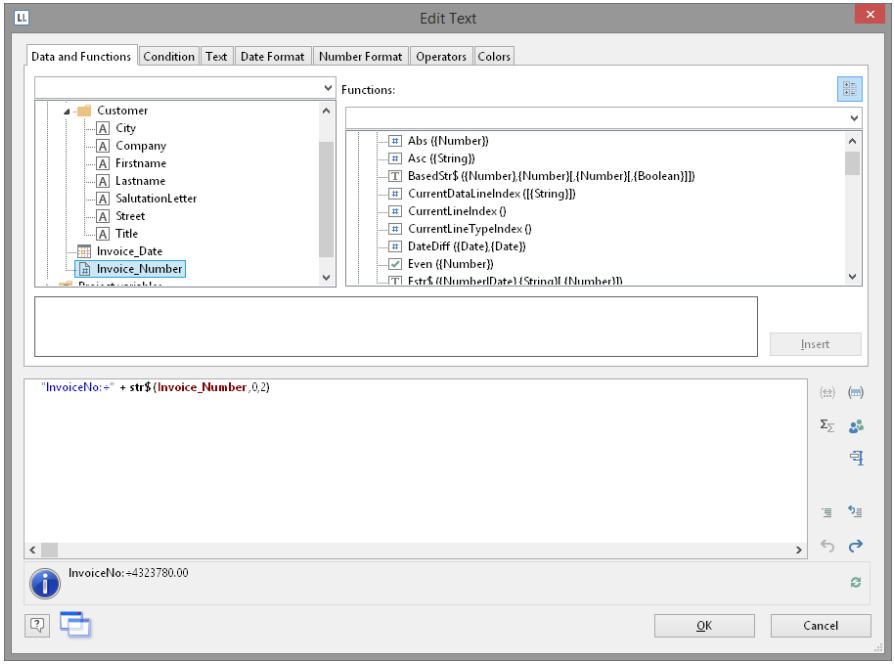


Figure 2.37: Format conversion with Str$()

Conversion with the "Str$()" function is essential since the invoice number is a field with the "number" type and the value that is returned is already defined as a "string" by the "Invoice number" text expression entered earlier. The return value must always be unique. The number must therefore be converted to a string by means of a function. The "Str$()" function is one way of doing this. This function has 3 parameters: The first parameter is the number that is to be converted to a string; the second parameter specifies the minimum length and the third parameter the number of decimal places.

10. Now increase the font size for "Invoice". To do this, select the relevant line.
11. Set the font size to 24 by means of the "font size" button in Text Tools > Text (mini-toolbar).
12. Now open the paragraph properties dialog via double-click to increase the distance to the next line. In this dialog, you can define the properties for each line. Set the value for the "Paragraph Spacing" property for the first line to 12 pt.

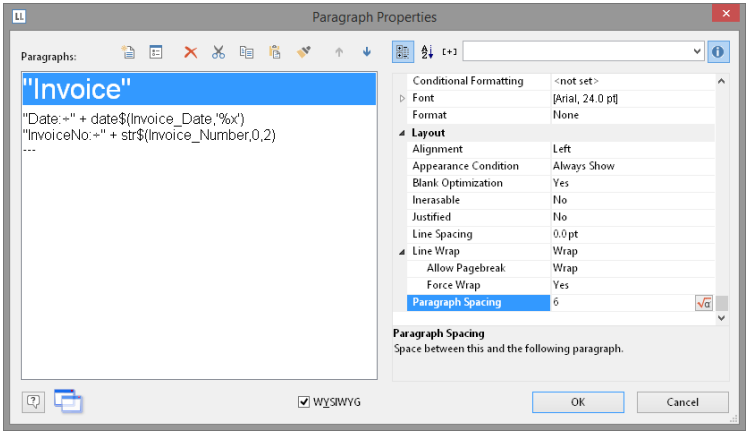


Figure 2.38: Paragraph properties dialog

13. And you now have an attractive invoice header.

2.3.5 Adding the Item List

Use the "Report Container" object to add the item list to the report. As the name says, a report container can hold several objects: tables and freely defined content, charts and cross tabulations. You need the "Table" element for the item list, and "Free content" for the covering letter. Please see chapter "Insert the Table for the Product List" for an introduction about how to create tables.

1. Choose Insert > Report Container (Objects > Insert > Report Container).

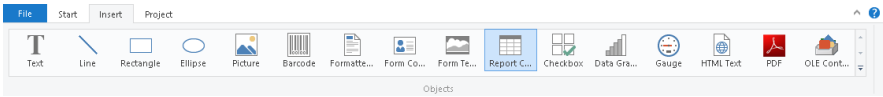


Figure 2.39: Tab "Insert"

2. In the workspace, hold down the left mouse button and pull the object to the required size.
3. A selection dialog will appear for the chosen element type. Choose the "Table" element type.

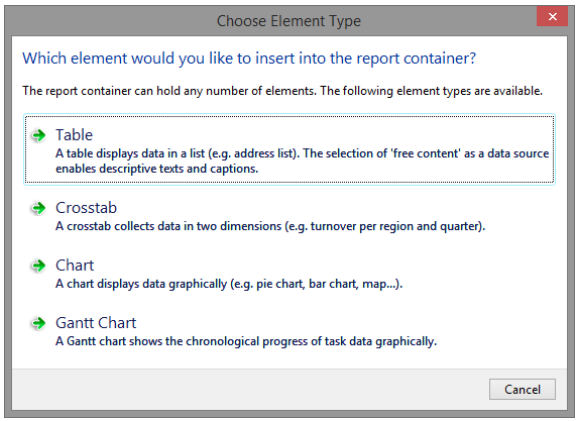


Figure 2.40: Object type selection

4. Now select the data source in the following dialog. All available tables are shown hierarchically; in other words, under the tables, you will find the related tables in each case. Select the "Items" table because it contains the fields that we want for our item list.
5. A selection wizard will appear with all the fields in the "Items" table.
6. In this dialog, now choose the columns for the item list. Double-click one after another on the fields: "Quantity", "No", "Description1", "UnitPrice". This will add the fields to the "Columns" area. Confirm your selection with OK.

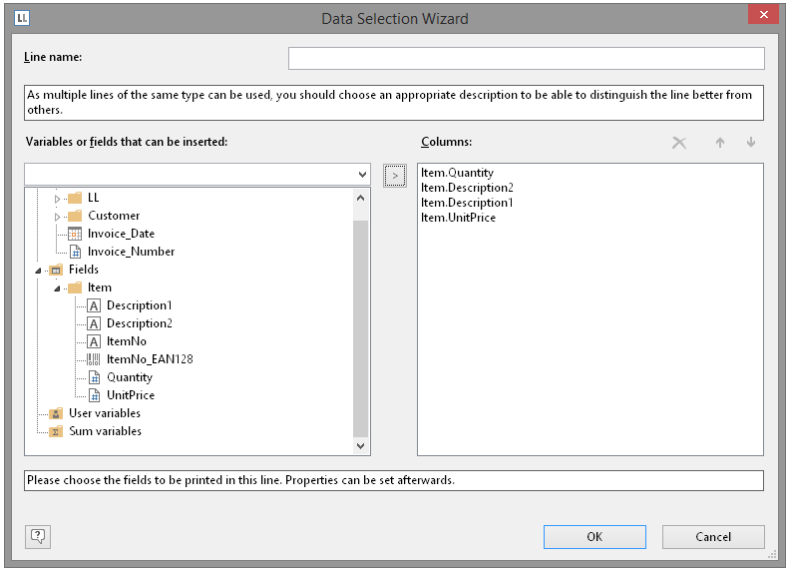


Figure 2.41: Data Selection Wizard

7. The table will now be displayed in the workspace. A header line with strings as the column titles and a data line with the contents of the fields will be created automatically.

   The width of the columns adjusts automatically. You can adjust the width of a column manually by moving the separating line to the right or the left with the mouse.

   Note: This changes all table columns, whose separators are within +/-2 mm from the mouse position. If you hold down the CTRL key, the action will only be carried out for the line on which the mouse is positioned. If the option "Change width individually" is enabled (Table> Lines and Columns or CTRL+M or project option "Column width modification affects next column"), you can alter the column width while making the next column smaller.

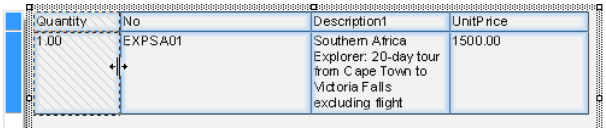


Figure 2.42: Changing column widths with the mouse

8. In the next step, you add a new column: "Total". Select the "UnitPrice" field by clicking in the upper left corner of the field. Then choose the "Insert Right" in Table Tools > Table (mini-toolbar).

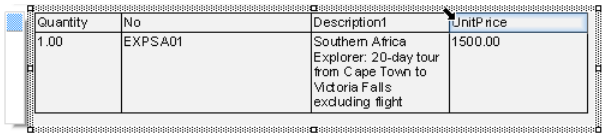


Figure 2.43: Select column

9. A menu will appear for the selected field type. Choose "Text" here.
10. The formula wizard will now appear, which you can use to define the contents of the field. Type "Total" and confirm with OK.

    A message will now appear giving you the option of reducing the width of the columns to allow the new column to be inserted in the visible area. Confirm this dialog. You have now added an additional column to the header line. You now need this column in the data line as well.
11. Now select the data line field containing the item price and add a new column to it. The total price is now to be calculated here. The total price is calculated by entering "Quantity*ItemPrice". To do this, select the relevant variables by double-clicking them.

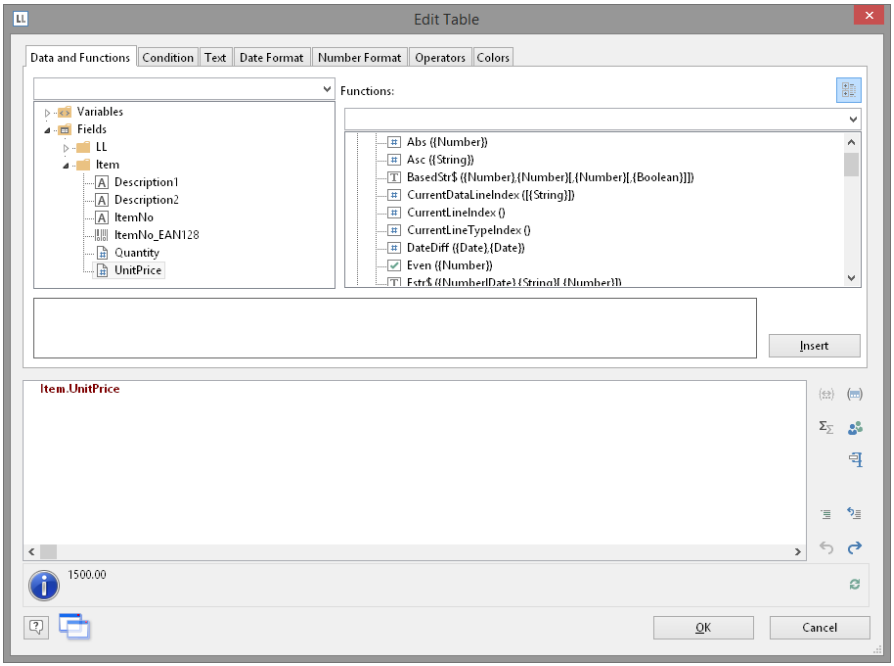


Figure 2.44: Multiplying two values in the formula wizard

Note: Open the list of available operators by clicking the "Operators" tab. Operators join two or more values or variables to give a new value. In this way, you can formulate arithmetic expressions (basic arithmetic operations) or logical expression. You can combine multiple operations in one expression. Please consider the calculation hierarchy of the operators used and place them in brackets if necessary. The "+" operator has a special meaning. It is not only suitable for additions ("Number" and "Date" value types) but is also used for joining strings.

2.3.6 Alignment and Formatting

Make use of the numerous formatting options to present the invoice in the form that you want. For example, change the column title and format the amounts as currency.

1. Click the column title that you want to change. The formula wizard will now appear, which you can use to change the contents of the field. Please consider that text must be enclosed in quotation marks.
2. In addition, you should also align the columns for the unit price and the total price with the column titles. To do this, hold down the SHIFT key and select all 4 fields by clicking in the upper left corner of the "Item Price" data line. Then choose the button for right alignment in the Table Tools (mini-toolbar).

3. To format both amounts as currency, hold down the CTRL key and select both fields by clicking in the upper left corner of each one. Then choose the button for the formatting dialog.

Figure 2.45: Multiple field selection

4. A selection dialog will now appear in which you can select the formatting that you want for the numeric field. To do this, choose the type on the left hand side i.e. "Currency". In the right pane, you can specify the currency formatting in detail. The settings for the relevant application will be used in each case as standard. Alternatively, you can choose the system setting or a user defined setting.

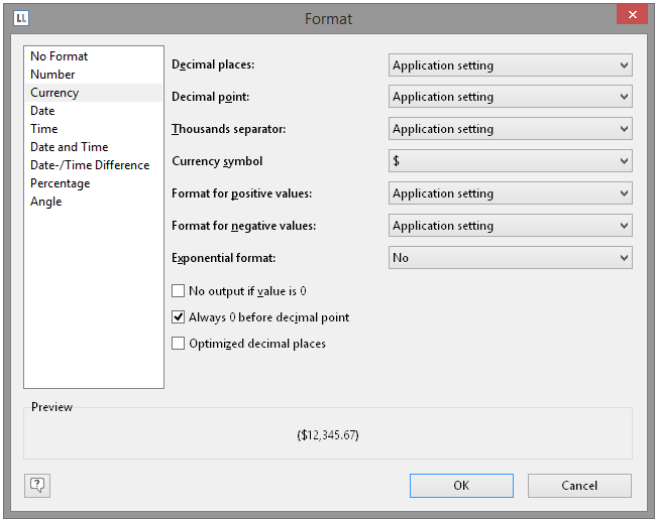


Figure 2.46: Formatting a field

5. Format the field for the quantity as a number without decimal points.
6. Our item list will now look roughly like this:

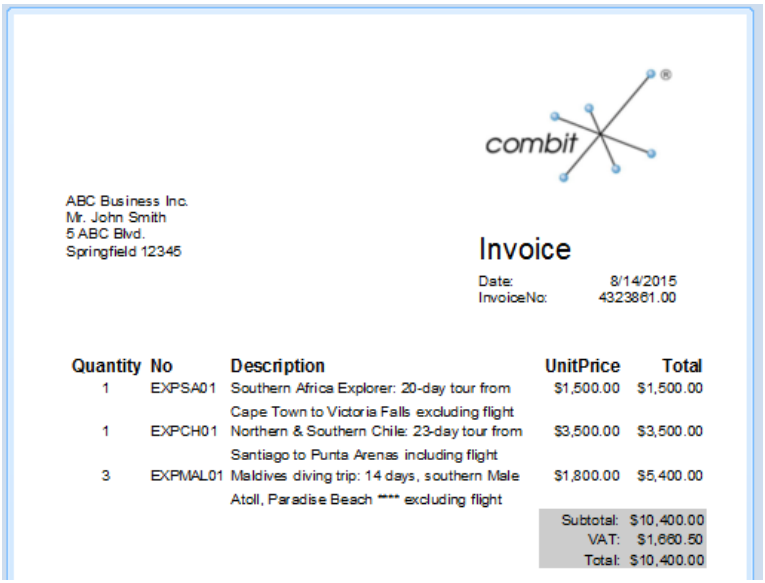


Figure 2.47: Preview

2.3.7 Background Color and Frame

In order to structure the invoice and make it more attractive, it's a good idea to give at least the column headers a colored background. You can also modify the background color.

1. To do this, select a column title.
2. Now open the paragraph properties dialog via double-click. In this dialog, you can define the properties for each column and row. Hold down the CTRL key and select all columns.
3. Click the "+" sign to expand the "Background" property group.
4. For the background, choose the "Pattern/block color" property and the color, e.g. LL.Color.LightSkyBlue. You reach the LL.Colors via the arrow button and the standard color dialog via the ... button.

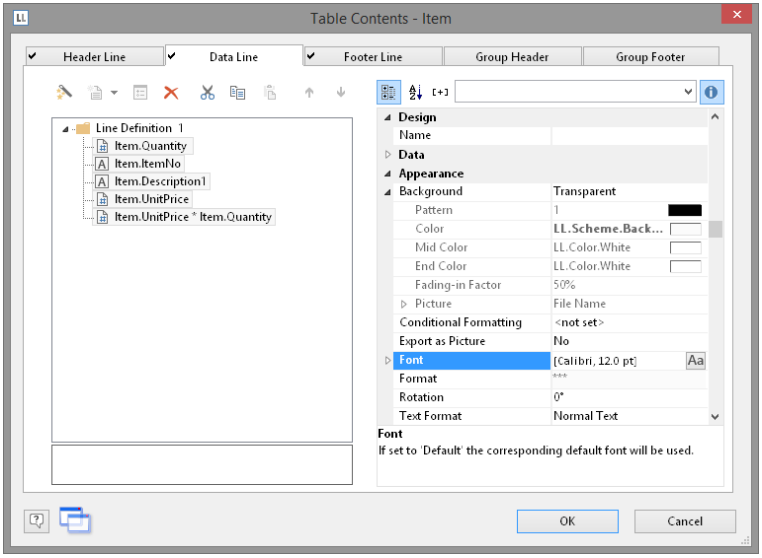


Figure 2.48: Object properties dialog for the table: background

5. In addition, you want to increase the spacing between the header and the data line. Since this is a line property (and not a column property), select the line. Here you have the "Spacing" property. Choose e.g. 0.1 inch as "Bottom" to increase the spacing below the column title.

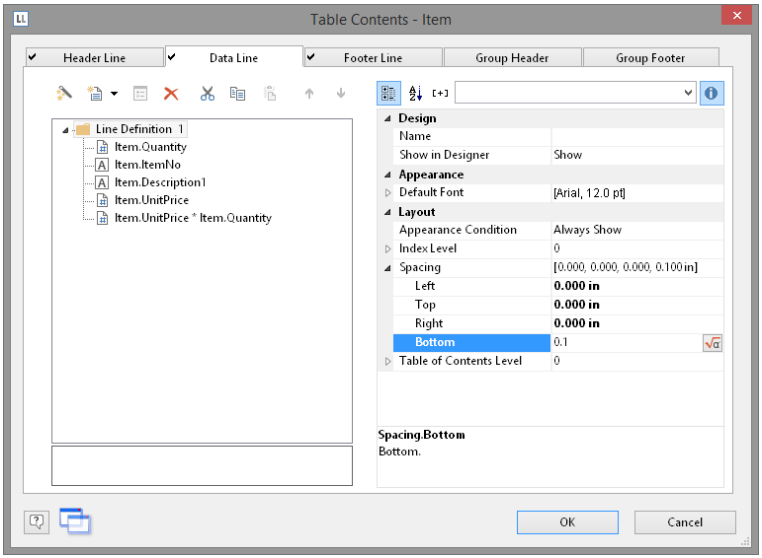


Figure 2.49: Object properties dialog for the table: margins

6. Now it only remains to make the settings for the frame. You can define different settings independently for each cell. However, it's normally a good idea to make the settings for the entire table. For this reason, the settings for the frame are included in the table properties. You will find the table properties, as standard, on the lower left when you select the table in the "Report Container" tool window. When you select the property, there is a button which you can use to open the dialog for the frame properties.

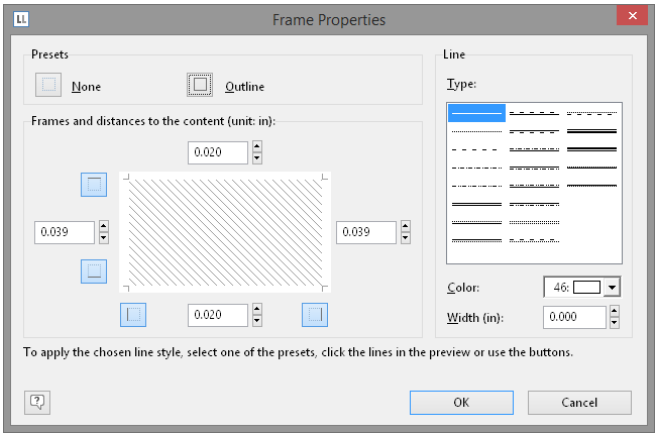


Figure 2.50: Frame properties

7. Choose "white" as the color and click "Outline" to apply the color.

   Please note: If you don't apply the setting but simply confirm the dialog with OK, your settings will be lost!

8. The invoice will now look roughly like this in the preview:

Figure 2.51: Preview (frame and background)

2.3.8 Invoice Footer With Totals

You now need to output the net totals, the VAT and the total amount in the invoice footer. You can simply insert these values if they are held as fields in the database.

In our case, however, you must first calculate the values. To do this, you use the "Sum()" aggregate function. This function totals the values that are passed to it.

Since the totals are to be output at the end of the table, you define a footer for this purpose.

1. Click "Insert Above" in the Table Tools (mini-toolbar) and then click "Footer Line".

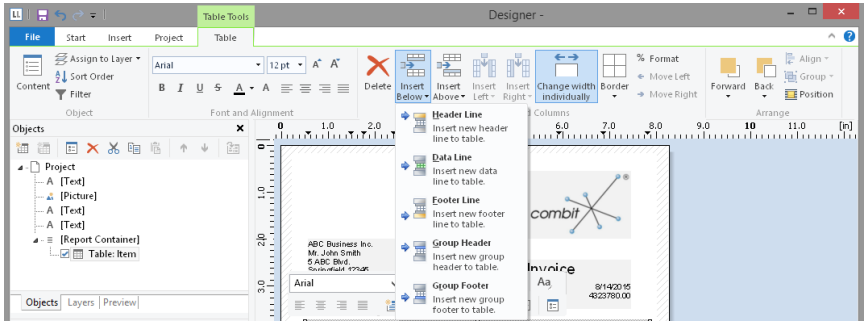


Figure 2.52: Add new line

2. You have not yet defined a line for this line type so you will be asked whether you want to use an existing line definition from one of the other line types. This wouldn't save any time at this point. Therefore, choose the "Single field or free content" option.

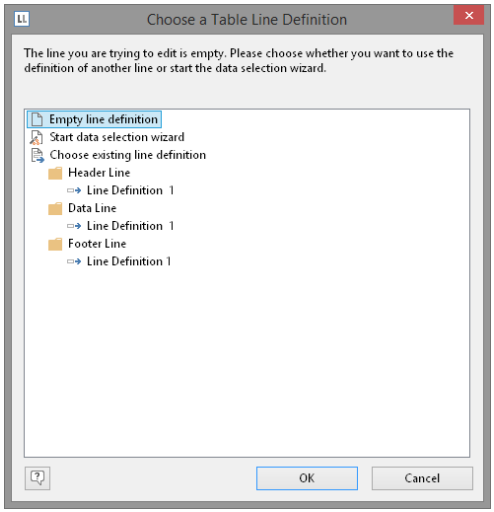


Figure 2.53: Applying a line definition

3. The formula wizard will open to allow you to define the contents of the first column. Enter "Subtotal", not forgetting to enclose it in quotation marks.
4. Once you have created the first line, add another column to it for the aggregation. Use the "Sum()" function for aggregating values. You can either type it in directly in the result field in the formula wizard or you can select the function from the list of aggregate functions by double-clicking. As a parameter, enter the value to be aggregated – in this case Quantity*ItemPrice.

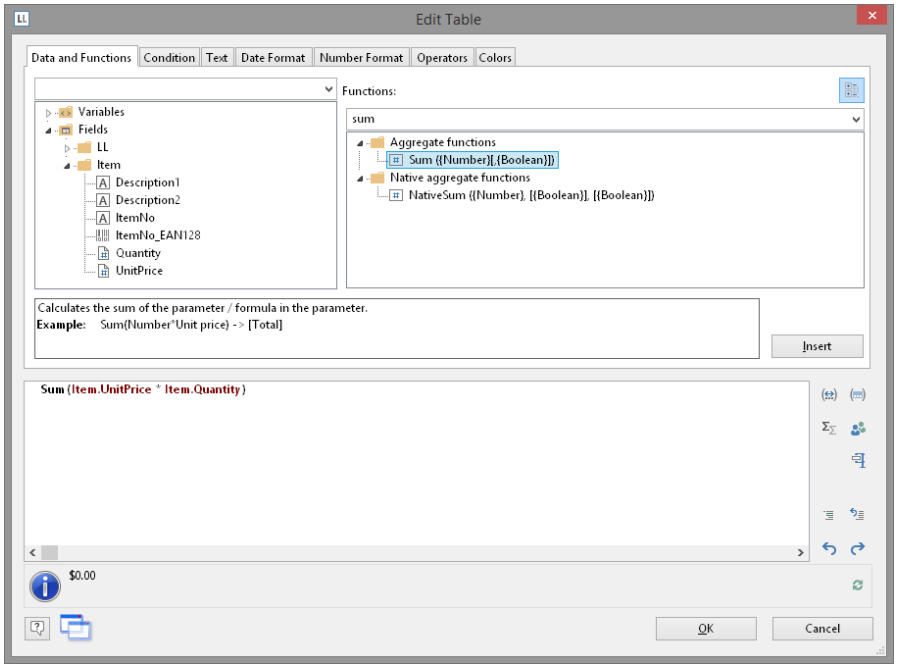


Figure 2.54: Totaling with Sum()

5. The entire line should now be moved a little to the right. Hold down the CTRL key and drag the column separator on the extreme left at the outer edge of the table to the right. An empty column will be inserted automatically as a spacer on the extreme left.
6. You must also format the total field as currency, give both columns the same background color as the header line and set the "Top" margin to 0.1 inch to correspond with the "Bottom" margin of the header line.
7. As these footers are only to be output on the last page, even in the case of multiple page invoices, you must now specify the "Lastpage()" or "LastFooterThisTable()" function for the "Appearance Condition" line property.

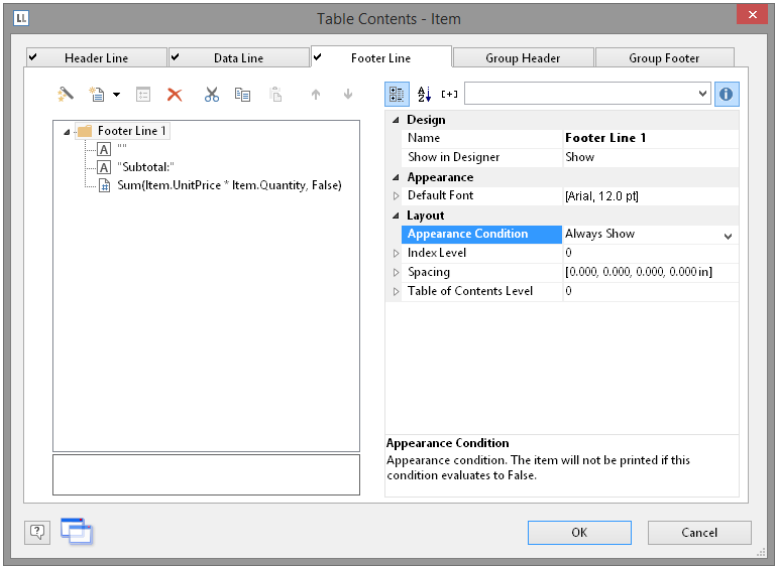


Figure 2.55: Object dialog with 3 columns

8. You have now defined the first footer and the invoice looks like this:

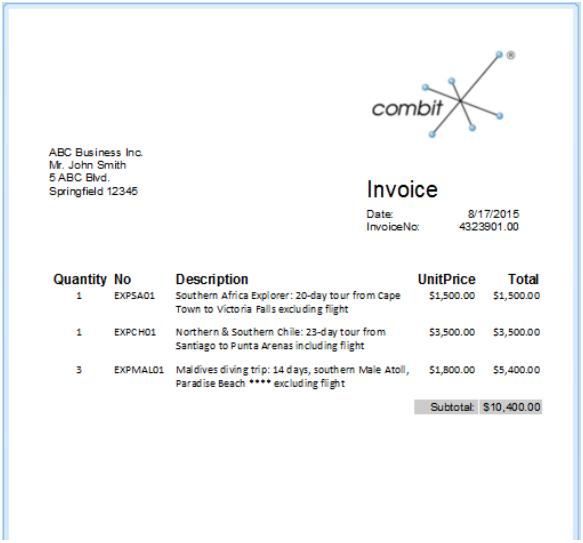


Figure 2.56: Preview (footer)

2.3.9 Create Additional Footer Lines

You can create as many line definitions as required for each line type (data line, footer). The different line definitions are shown in the object dialog as a tree structure.

For our example, now create two more footers for the VAT and the grand total.

Subtotal:	$10,400.00
VAT:	$1,660.50
Total:	$10,400.00

Figure 2.57: Preview 3 footers

1. To add more lines in the object dialog, first select an existing line definition. You can then create a new line definition with the "Append line definition" button.

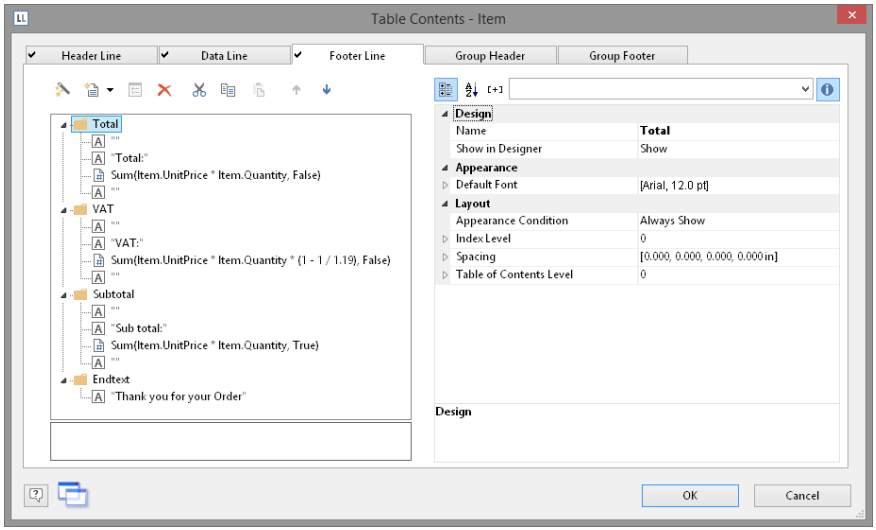


Figure 2.58: Object dialog with 4 lines

Alternatively, you can add a new line via the context menu or with the Table Tools (the mini-toolbar) directly in the workspace.

2. A dialog will appear asking you whether you want to use an existing line definition. It saves some time if you use the footer that you have already created as you will not have to configure the left margin, alignment or background colors. Therefore, choose the "Line definition 1" entry from the "Footer" area.
3. The line will now be inserted. Click the "Subtotal" field so that you can then change the content to "VAT" with the formula wizard. Don't forget to enclose the text in quotation marks.

4. Once you have created the column, click in the column to enter the aggregation. Instead of the total net amount, the 10% VAT is to be output here. Therefore, you simply multiply the amount by 0.1:

   *Sum (Item.Quantity * Item.UnitPrice * 0.1)*

5. Proceed in the same way with the third footer. Copy the existing footer, change the content and, in the formula, add the VAT to the total, like this:

   *Sum (Item.Quantity * Item.UnitPrice * 1.1)*

6. You have now defined the footer and the invoice looks like this:

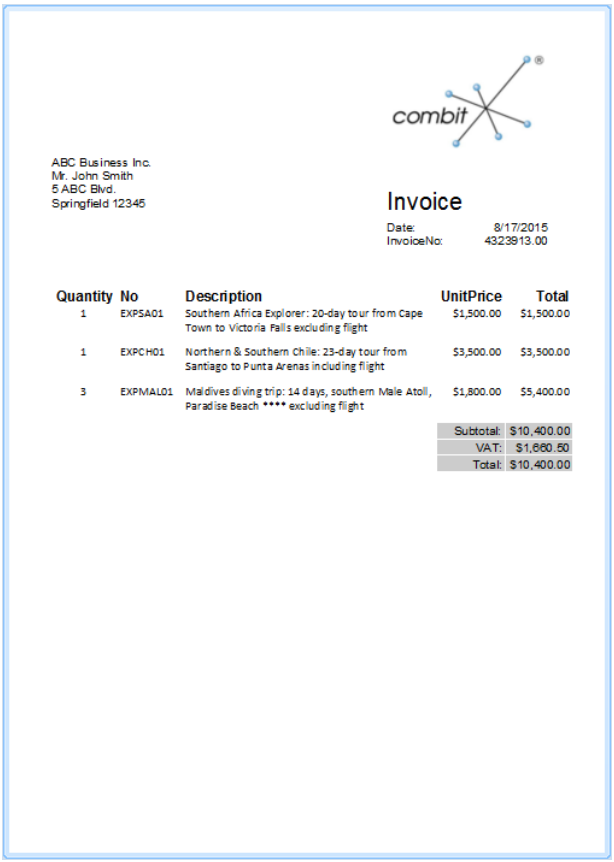


Figure 2.59: Invoice with 3 footers

2.4 Creating a Simple Label

For your first label, you will now create an item label.

1. Start the Designer.

2. A file selection dialog will appear. To start a new project, choose the New button.

   Note: This button is not available in Windows XP. Enter a name for the new print template in the "File name" field and then choose "Open".

   To open or edit an existing project, choose **Open**.

3. The standard project for this project type is displayed. This standard project is normally an empty workspace with a certain paper size and alignment.
4. Select a label format via Project > Layout Regions (Project > Page Setup). In the "Templates" tab, choose the template that you want from the predefined label formats of various manufacturers. This specifies automatically the size of the individual labels, how many are to appear on the sheet and how they are to be distributed. You will find more information about this in the chapter "Templates for Label Formats".

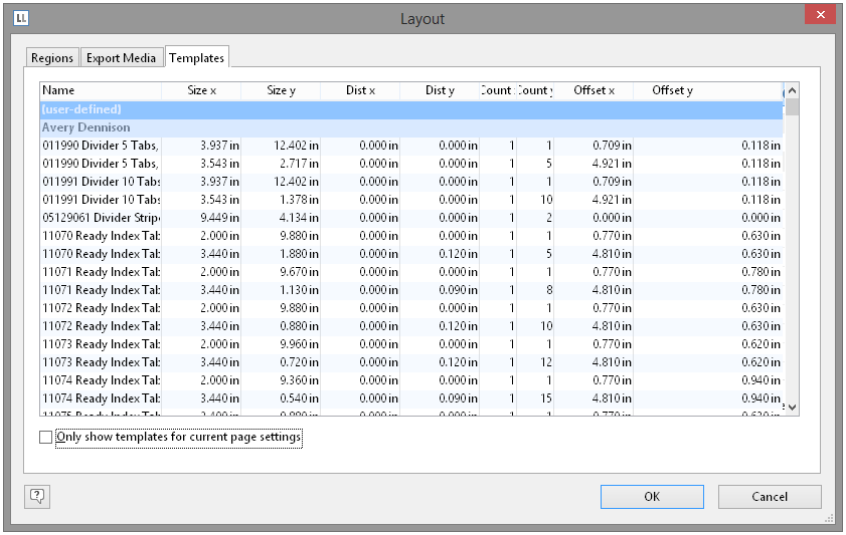


Figure 2.60: Specify label format

5. A single label will now be displayed in the workspace.

2.4.1 Insert Object

A picture of the item is to be displayed as a picture object on the label together with two text objects (Item_No, Description and Price). Place a tab stop between the text "Item No." and the "Item_No) variable.

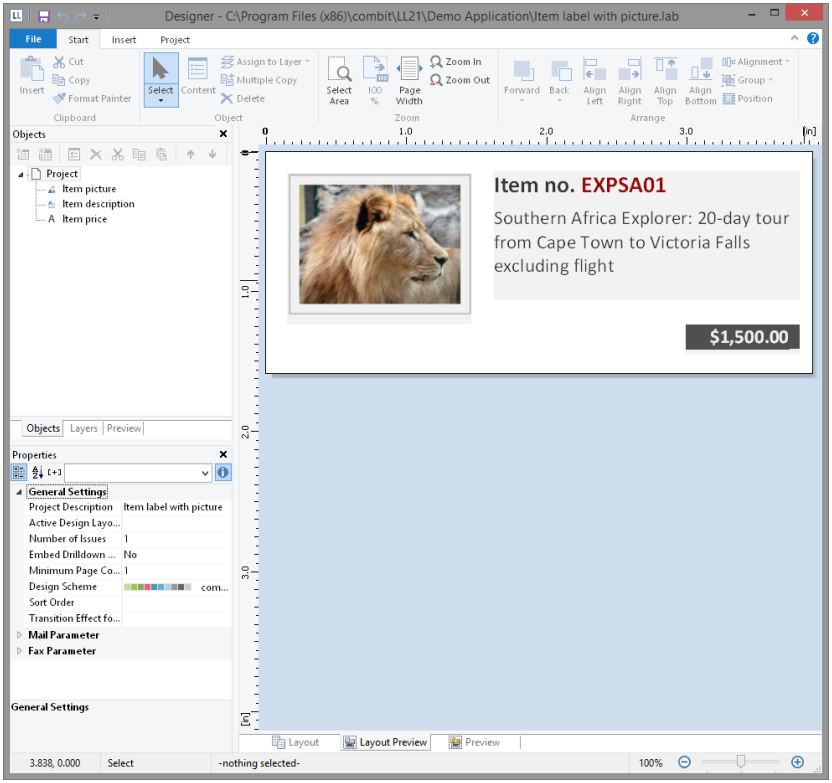


Figure 2.61: It should look like this

1. Begin by positioning the text object. Choose Insert > Text (Objects > Insert > Text).

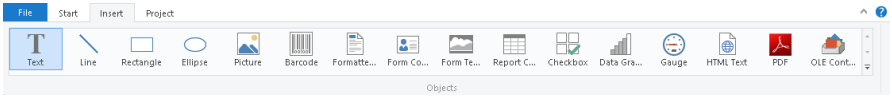


Figure 2.62: Tab "Insert"

2. Pull the object to the required size.
3. The formula wizard will now appear, which you can use to define the contents of the text object.
4. Now follow the steps described in Chapter "Add the Address Field" onwards.
5. Use the picture object to add a logo. Drag the "Picture" variable from the list of variables into the workspace. Pull the object to the required size.

2.4.2 Insert Barcode

The content dialog for the barcode object lets you define the barcode more precisely. Choose "Text" if you want to print fixed text as a barcode. Choose "Formula" if you want to use a formula as a barcode, and define a valid formula expression with the "Edit" button. The formula must return a "barcode" value type. You can, of course, also enter variables. However, they must first be converted to the "barcode" type with the Barcode() function.

2.4.3 Printing Labels

You can start the print function directly from the higher-level program, from the real data preview or via File > Print.

1. The output options dialog will appear.
   - Under "Print target", you can change the printer or the printer configuration.
   - Select the output format (e.g. preview, printer) under "Direct to".
2. The "Select" button lets you specify the starting position when printing the sheet of labels. In this way, you can also print sheets of labels that have already been partly used. You will find a sample label sheet for your label project in the dialog for selecting the start position. Click the label where the print is to start.

3. Effective Workspace Techniques

This chapter will provide you with useful information and the most important techniques for working efficiently with the Designer.

3.1 View Mode

You can select the view mode by means of the tabs in the margin of the workspace:

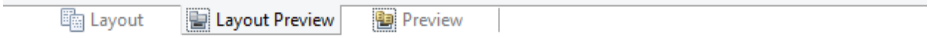


Figure 3.1: Tabs for selecting the view mode

3.1.1 Layout

In layout mode, you merely see the object frame and the contents of the objects as formulas.

3.1.2 Layout Preview

The layout preview shows the objects in the WYSIWYG format. In addition, the objects are transparent and are drawn in the color of the layer to which they are assigned.

Choose File > Options > Preview to define global settings for the preview.

- Setting Colors for the Preview: In the "Colors" group you can define the color for the background of the preview window using the combo box "Background". With the combo box "Border" you can select the color of the simulated paper border in the preview.
- Display of Label/Card Projects: Select if the preview should contain only one label or the complete page.
- Optimized View: Using the options from the "View Optimization" group you can reduce different preview details, which enables a faster preview.
- Real Data Preview
- Objects can be marked by color (the color depend on the assigned layer).

3.1.3 Real Data Preview

The real data preview function is available directly in the Designer provided that your application supports it. In this way, you can check the layout of a printout without wasting paper in order to do so. After checking the layout, the actual print can be started from the preview without having to use the print command again.

Choose File > Options > Preview to set the maximum number of pages which are displayed in the Real Data Preview.

Also see "Real Data Preview" in chapter "Output Options".

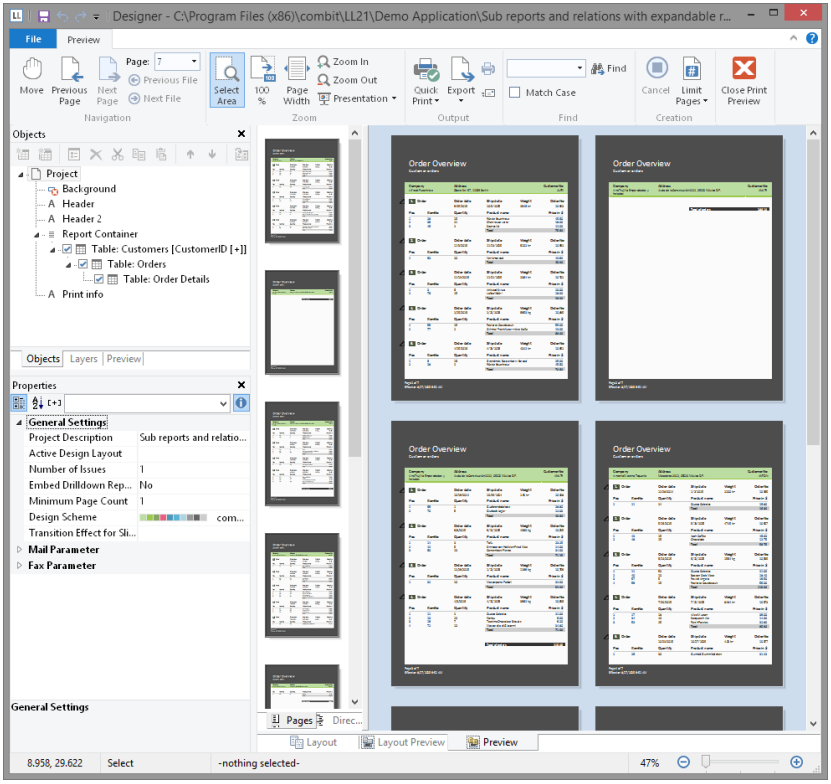


Figure 3.2: Real data preview in the Designer

3.2 General Procedures

3.2.1 Choosing a Page Layout

The first task in a new project is to set up the page layout that you want. Choose **Project > Layout Regions** (Project > Page Layout) to specify properties such the choice of printer, paper size and orientation.

If multiple layout areas are defined, the active workspace can be selected via the "Active Design Layout" project property.

3.2.2 Zoom

It is possible to zoom in on the workspace. Use "Zoom In", "Zoom Out" and "100%" to adjust the view in the workspace. Use the Zoom slider in the status bar to slide to the zoom percentage you requires (50% - 500%).

Use "Select Area" to select the view area with the left mouse button. Choose Start> Select Area (objects toolbar> Select).

3.2.3 Status Line

The status line is divided in three sections.

- The current mouse position from upper left.
- The active operation (e.g. selection).
- Name, position upper left, position lower right, width, height and layer of the selected object.
- Zoom slider for Workspace and Preview.

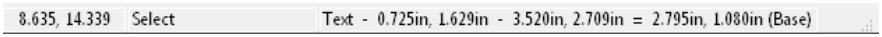


Figure 3.3: Status line

3.2.4 Ribbon

The Ribbon contains command buttons on different tabs. The commands are arranged according to how often they are used. Frequently used commands are available prominently; less frequently used commands are located on less prominently.

Note: Alternatively, you can work with a classic menu and toolbars. Select the type of display in the project options (Project> Options> Workspace).

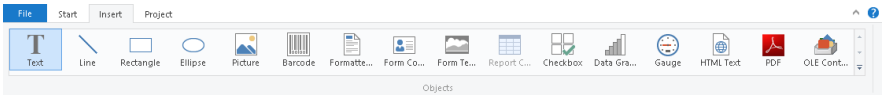


Figure 3.4: The Ribbon

Some other commands are displayed only when you might need them, in response to an action.

Text Tools

If you insert a text object, the **Text Tools** and the tab "Text" are displayed. The tab contains the commands you need for working with text objects. When you have finished the work on the text object, the Text Tools are hidden.

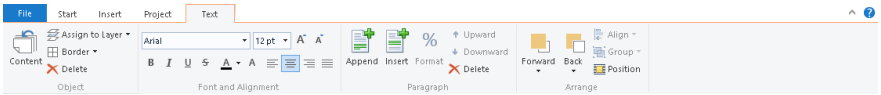


Figure 3.5: The Text Tools

With the Text Tools you can append/insert a paragraph, move paragraphs upwards/downwards, apply fonts, font sizes, text colors and formatting as well as arrange objects.

- To select a complete paragraph, click onto the bar on the left. Hold Ctrl or Shift to select multiple paragraphs or a complete range.

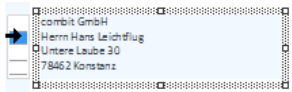


Figure 3.6: The Table Tools

Table Tools

If you insert a table, the **Table Tools** and the tab "Table" are displayed. The tab contains the commands you need for working with table objects. When you have finished the work on the text object, the Table Tools are hidden.

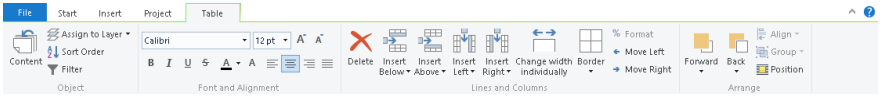


Figure 3.7: The Table Tools

With the **Table Tools** you can define a new line, insert a new row, move selected rows/cells to the left/right, borders, apply fonts, font sizes, text colors and formatting as well as arrange objects.

- To select a field, click in the top left corner of the field. Hold Ctrl or Shift to select multiple fields or a complete range.

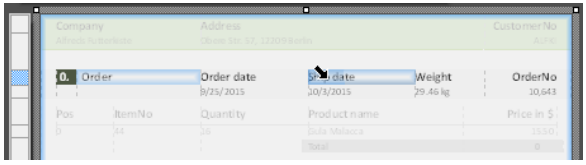


Figure 3.8: Select a field

- To select a complete line, click onto the bar on the left. Hold Ctrl or Shift to select multiple paragraphs or a complete range.

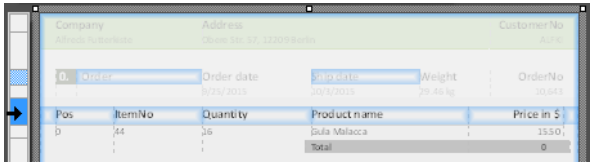


Figure 3.9: Select a complete line

- To select a complete column, hold Alt. Hold Ctrl or Shift to select multiple columns or a complete range.

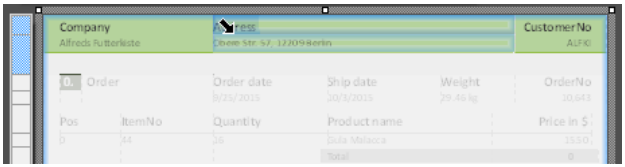


Figure 3.10: Select a complete column

Drawing Tools

If you insert a drawing object, the Drawing Tools and the tab "Design" are displayed. The tab contains the commands you need for working with drawing objects (e.g. Outline color, Lineweight).

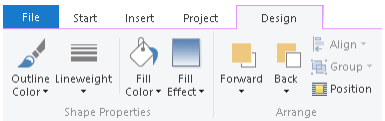


Figure 3.11: The Drawing Tools

Minimize the Ribbon

The ribbon can be minimized in order to save screen space.

- Right-click the ribbon, and then click Minimize the Ribbon.
- To quickly minimize the ribbon, double-click the name of the active tab. Double-click a tab again to restore the ribbon.
- To minimize or restore the ribbon via Keyboard shortcut press CTRL+F1.

To use the ribbon while it is minimized, click the tab you want to use, and then click the option or command you want to use.

Quick Access Toolbar

The Quick Access Toolbar is a customizable toolbar that contains a set of commands that are independent of the tab on the ribbon that is currently displayed. You can move the Quick Access Toolbar from one of the two possible locations, and you can add buttons that represent commands to the Quick Access Toolbar.

Figure 3.12: The quick access toolbar

On the ribbon, click the appropriate tab or group to display the command that you want to add to the Quick Access Toolbar. Right-click the command, and then click "Add to Quick Access Toolbar" on the shortcut menu. In order to delete a command, right-click the command you want to remove from the Quick Access Toolbar, and then click "Remove from Quick Access Toolbar" on the shortcut menu.

The File menu

The File menu (The blue tab top left) contains commands for saving, printing, exporting the project and the project options.

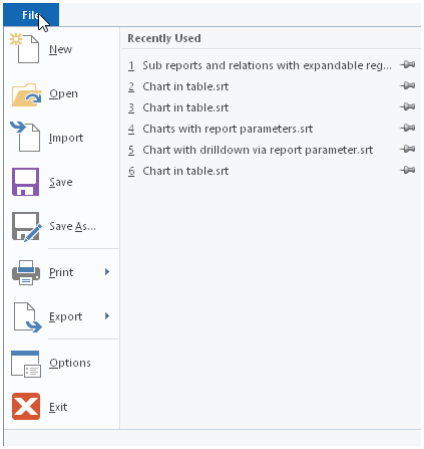


Figure 3.13: The File menu

3.2.5 Mini-toolbar

When you select a text object or a table object, a convenient toolbar in miniature format is displayed, the mini-toolbar.

Note: The Mini toolbar is especially useful if you use the classic menu and toolbars instead of the ribbon. You can select the type of display in the project options (Project> Options> Workspace). When using the ribbon, the functions of the mini-toolbar will be displayed in the tabs "Text Tools" and "Table Tools".

- With the mini-toolbar you can add a text paragraph, define a new table line, insert a new table row, apply fonts, font sizes, orientations, text colors and formatting as well as open the object dialog.
- You can close the mini-toolbar by pressing Esc. With the project option "Show mini-toolbar" (File > Options > Workspace) it can be suppressed permanently.

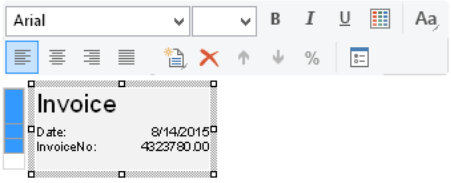


Figure 3.14: Mini-toolbar for text objects

3.2.6 Default Settings for Font and Frame

Choose File > Options > Objects.

- The "Select" button under "Object font" lets you choose the default font to be used for objects.
- Under "Color preferences", you can specify the border and the filling for objects.

By default, the "preset" is activated for the various object properties (e.g. Font.Size, Font.Bold, Font.Color). Hence, if a preset is changed at a later point in time, this will affect all properties for which the font was not manually changed. To increase the size of the font by 2pt as compared to the preset, select "+2" as the value for the size, or correspondingly "-2" to decrease the font size by 2pt.

When you start a new project, it's a good idea to configure these settings using suitable values to keep the effort required for making manual changes to a minimum. The settings only apply for the current project.

3.2.7 Undo or redo an action

You can undo or redo actions and save yourself some retyping.

Undo an action

Press CTRL+Z (Alt+Backspace) until you've fixed your mistake. If you prefer your mouse, click Undo in the Quick Access Toolbar, in the upper-left corner of the Window.

You can't undo some actions, such as clicking commands on the File menu or saving a file.

Redo an action

To redo something you've undone, press CTRL+Y or F4. Or click Redo on the Quick Access toolbar.

3.2.8 Copy Formats

You can copy formats and apply them somewhere else.

1. Select the object or an element in the report container (e.g. use the selection bar on the left of the container).

   In tables, you can select individual cells.

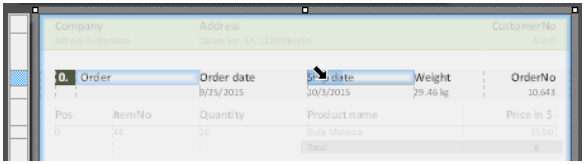


Figure 3.15: Select a table cell

In crosstabs, you can also select individual cells. Open the properties of the crosstab and go to the "Cell Definition" tab.

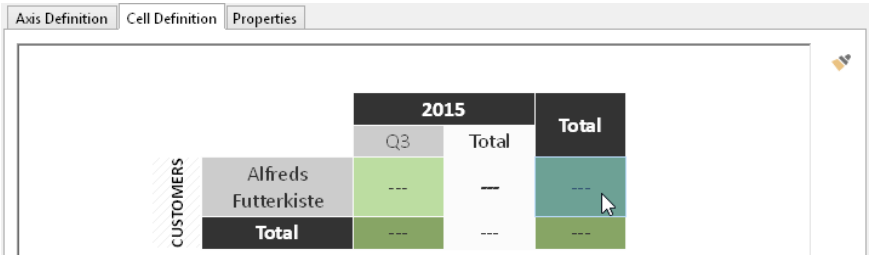


Figure 3.16: Select a crosstab cell

2. Click the format painter tool on the tab "Start" (Edit > Format Painter). In crosstabs go the upper right corner of the "Cell Definition" tab.
3. Click on the object, the cell or element to apply the format.

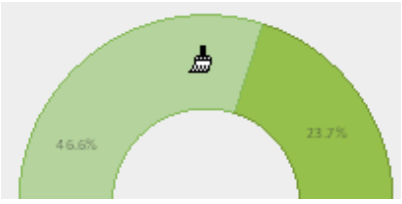


Figure 3.17: Format Painter

4. If you want to copy the formatting to more than one cell, object or element, double-click instead of single-clicking Format Painter. To exit the Format Painter, press Esc.

3.2.9 Variable/field list and drag & drop

The variable/field list (Project > Variables/fields) shows all variables and fields available in the current project and supports drag & drop for variables and fields.

- When you drag variables to an empty area, a paragraph will be created in a new text object.
- When you drag variables to an existing text object, the variable can either be inserted into an existing paragraph, or a new paragraph can be created.
- When you drag fields into an existing report container, a new table will be created.
- If you wish to add additional columns for existing rows in tables, you can simply drag the desired fields from the list to the corresponding location using your mouse. In this case, the field can be added to the left or right of an existing column; the insertion position is indicated visually with the help of a symbol. The

column (default width 30 mm) will then be inserted in the corresponding row. Note that this may also create columns in invisible areas.

- For numerical fields, this also automatically creates a footer with sums. If you do not wish to create a footer, hold down the CTRL key.
- If you have selected multiple fields, the order of the selection will be noted and the fields will be placed in the corresponding order.
- When you drag fields to an empty area, a new table will be created in a new report container.
- When you drag fields into an existing report container, a new table will be created.
- When you drag fields from a relationally linked table to an existing table (e.g. fields from "Orders" to the table "Customers"), a new sub-table will be created.

3.3 Inserting and Arranging Objects

Objects are your project's building blocks. They are generated in the workspace where they are also given a border with which their size and position can be changed. This border defines the space that the object takes up and thus also the maximum size to which the contents of the respective object can be expanded. Objects may overlap fully or partly.

3.3.1 Inserting Objects

Objects may be inserted in the project workspace in different ways: using the tab "Insert" (Object > Insert), shortcut keys or per drag & drop function of the variable list. Text objects are inserted most comfortably and efficiently per drag & drop from the variable list. Simply select the desired variable and drag it to a free area in the project workspace. The easiest way to insert all other objects is via the toolbar.

1. Select the desired object type. The mouse pointer will change to a crosshair.
2. Place the crosshair on the point at which a corner of the object should be placed. It is best to use the left upper corner of the planned object.
3. Depress the left mouse button and pull – while keeping the mouse button depressed – to the opposite corner of the planned object. If you started in the upper left corner, pull the crosshair to the lower right corner of the planned object.
4. A dashed frame will appear which represents the size that the object will assume upon release of the left mouse button.
5. Release the mouse button when the object (dashed frame) has the desired size.

3.3.2 Size and Position of Objects

You can move each selected object or change its size. If you select multiple objects, you can change them all as if a single object were selected.

1. Changing the size with the mouse: Select the object. If you position the mouse on the frame, you can change the size by pulling the frame inwards or outwards, as indicated by the arrows, while holding down the left mouse button. The object's dimensions are shown during the resizing. You must position the mouse in one corner of the frame in order to change the size both horizontally and vertically.
2. Moving with the mouse: Select the object. Hold down the mouse button and drag the object to the position that you want. If you press the SHIFT key, you will only be able to move the objects horizontally or vertically. The alignment remains the same.
3. Changing the size and moving with the dialog: You can also change the size and position of an object by means of the property list. You can enter values precisely here. If you double click the "Position" sub-item in the property list, a position dialog will appear which makes it even easier to enter the size and position of objects with the keyboard.
4. Using the keyboard to move objects or change their size: Select the object. Use the DIRECTION keys to move the object in the respective direction. Pressing the key once moves the object by the smallest possible unit, if you hold down the CTRL key, the object will be moved by ten times the smallest unit.

3.3.3 Arrangement as an Object List

Objects on the workspace may overlap or completely cover each other. Using the tab "Start" (Objects > Arrange) or via context menu, you can rearrange the planes of the selected objects so that they have the order you require (To Front, To Back, Forward, Backward).

> Please note that these "planes" (just a term in this case) have nothing to do with the layers. Objects that have been edited using "Arrange" will not have their layer assignment changed.

The object highest in the object list is the object in the background, the lowest/final object to appear in the object list is the object in the foreground.

Exception: Generally the unlinked objects will be printed first, followed by the report container and then the objects that are linked with other objects in some manner. In other words, even if the report container is the first object in the object list, it will still be printed last, i.e. in the foreground. With a temporal linking it is possible to print objects (e.g. a text field) on top of a report container. You can find further information about this process in the "Linking Objects" chapter.

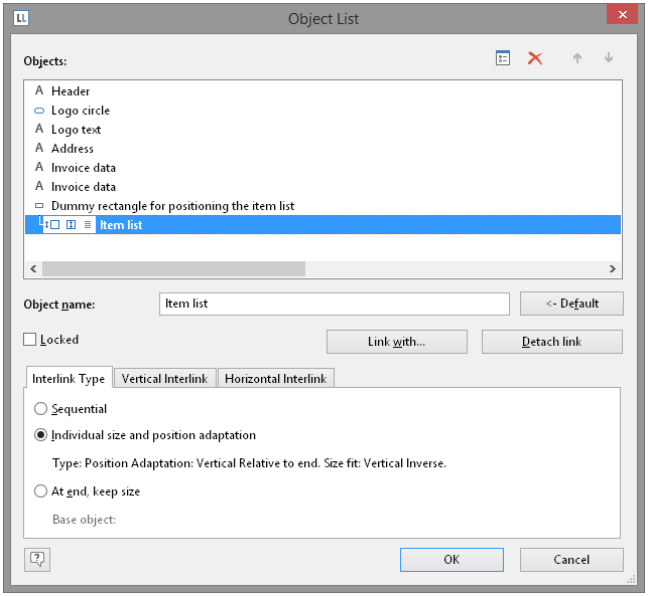


Figure 3.18: Print order in the object list

3.3.4 Grouping of Objects

You can group multiple objects that belong together and then modify them as if they were a single object. Please note that an object can only belong to one group. It is therefore not possible to combine groups to a higher-level group.

- In order to make a group of two or more objects, select the objects in question and then choose Group in the context menu.
- To edit a grouped object, hold down the ALT-key when selecting the object.
- To remove the grouping, choose the item Ungroup.

3.3.5 Copies of Objects

You can copy objects singly or multiply.

Copy objects

1. Select the object you want to copy, and press CTRL+C. You can also press CTRL+X to cut the object.
2. Move the mouse to the location where you want to paste the object and press CTRL+V (Start> Paste). You can also use the "Paste" command on the context-menu.

Multiple Copies of Objects

If you want to place several, similar objects with the same distance on the workspace, select the object and then choose Multiple Copies in the context menu. Define the number and spacing of the objects horizontally and vertically.

3.3.6 Importing Objects

With File > Import, you can insert a copy of all objects belonging to another project to the project that is currently loaded.

3.4 Alignment of Objects

You have different possibilities to align objects.

3.4.1 Displaying the Alignment Grid

Via Project > Gridlines (File > Options > Project) you can display an object alignment grid.

Define the properties of the gridlines via File > Options > Project. You can specify the spacing of the grid lines. The "Horiz./vertical synchronized" option causes the same grid spacing in both directions.

3.4.2 Aligning Objects

Via the tab "Start" (Objects > Arrange > Alignment) and the item "Arrange", or the corresponding toolbar, you can align multiple objects with one another. At least two objects must be selected for the function to be enabled.

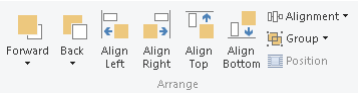


Figure 3.19: Toolbar for the alignment functions

- Align Left, Align Right, Align Top, Align Bottom: The selected objects are aligned to the border of the selection rectangle in which they are enclosed.
- Centered: The selected objects are centered in the respective direction (horizontal or vertical) within the selection rectangle.
- Size adjustment: The frames of the selected objects are adjusted to a common size in the respective direction (horizontal or vertical).
- Equal shape distance: The distance between the edges of the selected object is set to be equal. The outer edges in each case are significant here. The average distance is determined relative to the edges of the objects and the objects are arranged accordingly. In the event that the selected objects overlap, i.e. the intermediate area has a negative value, the function will not spread the objects

apart but instead, only the degree of overlapping will be adjusted to the average value.

- Equal center distance: The distance between the centers of the selected object is set to be equal. The average distance is determined relative to the centers of the objects and the objects are arranged accordingly. In the event that the selected objects overlap, the function will not spread the objects apart but instead, merely the degree of overlapping is adjusted to the average value.

3.4.3 Guides in the Workspace

You can create horizontal and vertical guides. To do this, position the mouse on a ruler, press and hold the mouse button and release it again in the workspace. A position dialog will then appear, allowing you to enter the exact position. The new guide is aligned in the same direction as the originally selected ruler. You can then move the guides around as you wish.

A catch function helps you to position objects directly on the guide. This function does not connect the objects permanently to the guide but merely helps you when positioning objects.

If you hold down the CTRL key when you move the guide, the objects connected to the guide will be moved as well.

The options relating to guides are defined via a context menu which appears when you click the right mouse button. This lets you choose a catch range in pixels for each guide. When you come within this range, the object will be drawn to the guide. The catch function is switched off if you hold down the CTRL function when working with objects. When drawing new objects in the workspace, the top left corner must be placed next to the guide so that the object will be connected to the guide.

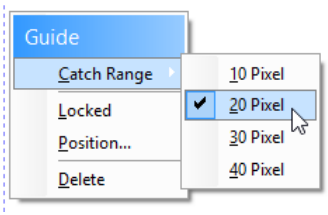


Figure 3.20: Context menu for guides

You can fix the guides in the workspace and prevent them from being moved by mistake. You can also specify the position of the guide directly.

3.5 Project Options

In the Project options (File (the blue tab top left) > Options or Project > Options), you find different defaultsfor the project, the objects, the preview and the workspace.

3.5.1 Options for the Project

You find different defaults under File > Options > Project.

- Defining Alignment Grid: See "Alignment of Objects" in this chapter.
- Precision: Here you can define the default number of decimal places for numeric values, which will be used as long as they aren't printed with format specifiers (ex. FStr$).
- Table of Contents and Index: Here you can set the maximum folder depth for table of contents and index. See "Report Sections" in chapter "Page Layout".

3.5.2 Default Settings for Font and Frame

Choose File > Options > Objects to choose the default to be used for object font, border color and filling color. See "Default Settings for Font and Frame" in chapter "Effective Workspace Techniques".

3.5.3 Preview

Choose File > Options > Preview to define global settings for the preview. See "View Mode" in chapter "Effective Workspace Techniques".

3.5.4 Options for the Workspace

Via the File > Options > Workspace menu item the workspace can be adjusted to your needs in various ways.

Font for formula wizard

In the "Layout-View: Text in Objects" group you can define whether the text contained in barcode, picture and formatted text objects should be displayed in the layout view (as an option with the selected font and formatting).

Settings for Usability

The "Usability" options allow you to define various default values.

- Check the option "Object Info" to get a tooltip with the object name.
- Check the option "New Project Wizard" to receive assistance when creating new projects.
- Set the "Selection mode after object insertion" option in order to switch to the selection mode automatically after inserting an object. This prevents you, for example, from inserting multiple objects accidentally.
- If the option "Use Ribbon if possible" is unchecked, a toolbar will appear.
- Show mini –toolbar: You can activate the mini-toolbar for text- and tabel-objects.
- Reactivate messages: Deactivated messages will be activated again.

- Property lists: You can choose whether the states of the property lists saved permanently, deleted when closing the designer or not to be saved.

Changing Column Widths Using the Cursor

The width of a field or an entire column can be controlled precisely by adjusting the "width" property. You can also control the width directly with your cursor in the workspace by selecting the table object and moving the right hand border line of a column. This will affect all table columns, whose separators lie within a +/-2mm interval of the cursor.

- The adjustment will affect only the line on which the cursor is positioned if CTRL is held down.
- The line will snap to a separator mark if it is within a 10 pixel interval of it. By holding SHIFT, this function is turned off.
- With the option "Column width modification modifies next column", it is possible to change the width of the column while also changing the width of the next.
- To change the widths of columns that are currently invisible, deactivate the "Edit only visible cells" option.

AutoRecover

It may happen that a project was not closed properly and you were unable to save changes you made. The reason may be e.g. a power failure or an error in the application.

The AutoRecover option allows you to instruct the program to save the project at regular, customizable intervals. This means that the changes made to the file are at least partially saved since the last save procedure, depending on how short the chosen save interval is.

When a project is opened, the Designer will detect that an AutoRecover file is available. You can then either save the recover file under a new name or ignore the file and continue.

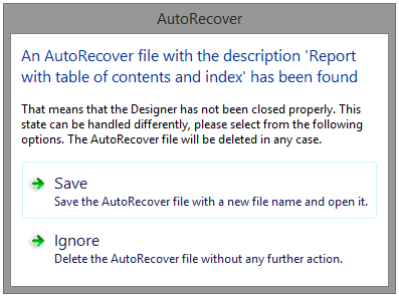


Figure 3.21: AutoRecover file found

4. Mastering Appearance Conditions

In this chapter, we will examine the concept of appearance conditions using a multi-page standard letter or mail merge as an example. By means of appearance conditions, you can specify when objects, elements, paragraphs, lines or columns are to be printed or displayed.

In addition, it is frequently helpful to assign objects that belong together in terms of content into what is called a layer. An appearance condition can be defined for each layer. This condition specifies the conditions under which the objects assigned to this layer are to be printed.

4.1 Where Will the Objects be Printed?

If a layer has not been defined for the objects, they will be printed on each page.

As an exception to this rule, table objects, cross tabs, text and formatted text are printed consecutively starting on the 1st page.

With text and formatted text, the "Page break" property must be set to "yes".

A new page will therefore be created automatically whenever the space available in the object is no longer sufficient. This means that you do not have to create a second page; this is taken care of automatically by table objects, crosstabs, text, formatted text or by means of the "Minimum page count" project property.

4.2 Working With Appearance Conditions

You can use filter conditions to control precisely the data to be output. In this way, you can specify conditions not only for displaying data records but also for displaying objects.

These conditions are logical expressions whose results decide whether a certain data record or a certain object is printed or not. If the logical expression is true, the data record or the object is printed. If the logical expression is false, the data record or the object is *not* printed.

In order to achieve this, you define a corresponding "Appearance condition". You will find these conditions in the properties of projects, layers, objects, elements, paragraphs, lines or columns.

For example, if you want to output the terms of payment in the footer of an item table, use the appearance condition for this line to specify that it is only to be printed on the last page. Otherwise, this footer will be printed on every page at the end of the table.

Example "Last page only": Lastpage()

Or you define a condition specifying that the company logo is only to be output if the letter is created as a PDF file, since, when outputting to the printer, the company logo is already printed on the letterheads.

Example "For PDF output only": LL.OutputDevice="PDF"

In appearance conditions for table footer lines, you can also use the predefined "Last page only" value. Internally, this entry uses the functions "Lastpage()" or "LastFooterThisTable()".

In appearance conditions for table headers, you can also use the predefined "First page only" value. Internally, this entry uses the functions "not Lastpage()" or "FirstHeaderThisTable()".

4.3 Working With Layers

If you define appearance conditions for a layer, you can then assign objects to this layer. This is very useful especially with large and complex projects as it allows you to hide or display the objects assigned to a specific layer via the checkbox in the tool window.

In this way, you avoid overlapping the different objects on the workspace which would otherwise make working on individual objects difficult.

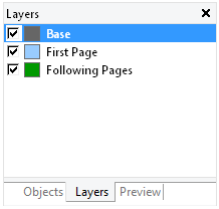


Figure 4.1: Layers tool window

4.3.1 Defining Layers

You define layers via **Project > Layers** (Project > Layer Definitions) or by double clicking in the "Layers" tool window.

In the "Layers" dialog, you can define as many additional layers as you want with the "New" or "Copy/Insert" buttons. Each new layer appears initially with the name "Layer". You can enter a meaningful name for the layer in the "Name" field.

- When creating new projects, the "Base", "First page" and "Following pages" layers are automatically defined.
- It's a good idea to give the layers different colors in order to easily tell them apart. This also causes the objects in the respective layers to be shown in different colors in the layout preview display mode. This color has no effect on the actual print.

- If you delete a layer, the associated objects are automatically assigned to the base layer. At least *one* layer must be defined.
- New objects are automatically assigned to the first visible layer.
- The Lastpage() function in an appearance condition can only be evaluated correctly if an object is linked to a table/report container.
- User variables cannot be used within appearance conditions of layers.

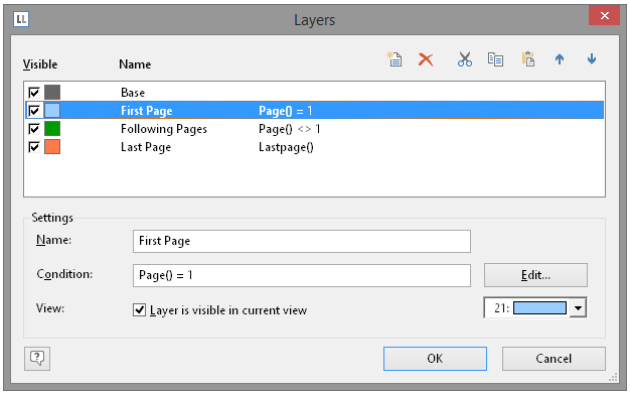


Figure 4.2: Layer definition dialog

In the "Condition" field you define the appearance condition for this layer. This appearance condition then applies for all objects on the layer in question, i.e. the associated objects are only printed when the condition for the layer is met.

Typical appearance conditions:

Condition	Explanation
no condition	The objects on this layer are always printed.
Page()=1	The objects on this layer are only printed on the first page.
Page()<>1	The objects on this layer are printed from the second page onwards.

4.3.2 Assigning Objects to a Layer

Once you have defined the layers, you can assign objects to them. You have two options:

1. In order to assign multiple objects to a layer, select the objects in the workspace and choose **Assign to layer** in the context menu. Select the layer that you want in the dialog that appears and confirm with OK.

   In the workspace, the assigned objects automatically receive the color of the corresponding layer so that they can be easily differentiated from the other objects. This only affects the appearance on the workspace and not the print.

2. Alternatively, you can also copy objects into a layer. This is useful when you want to include the same objects in different layers. Example: you create one layer for each language. You then copy all objects into the language layer and translate them.

   The original object remains in its original layer and a copy of the object is created in an additional layer. To do this choose **Copy to Layer** from the context menu for the selected object.

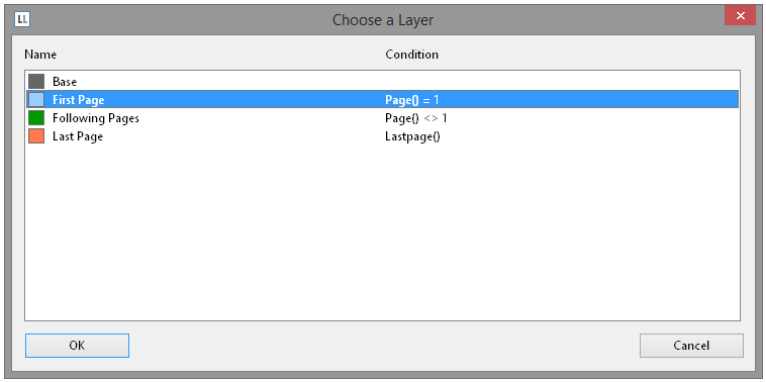


Figure 4.3: Dialog for assigning objects to a layer

4.4 Practice: Create a Mail Merge Project

You learned the basic procedures in Chapter 2. In this chapter, you will now meet other functions and possibilities for designing reports, using a serial or standard letter as an example. As opposed to the previous examples, you use the formatted text object here for the text of the mail merge and change the position of the object from the second page onwards.

4.4.1 Create a New Print Template

1. Start the Designer.
2. A file selection dialog will appear. To start a new project, choose the New button.

   Note: This button is not available in Windows XP. Enter a name for the new print template in the "File name" field and then choose "Open".

   To open or edit an existing project, choose **Open**.

4.4.2 Adding a Company Logo

Use the picture object to add a logo.

1. Choose Insert > Picture (Objects > Insert > Picture).

2. Pull the object to the right size and select an image file (see Chapter 2.2.1).
3. The company logo is only to be printed for PDF output. The logo is not to be printed when outputting to the printer. This means, you select the picture object and enter the "LL.OutputDevice = "PDF" logical condition in the "Appearance Condition" object property.

   Also see chapter "Overview of LL Variables and LL Fields".

4.4.3 Add the Address Field

To add an address, use the text object. Text objects let you place text or the contents of fields in the workspace.

Figure 4.4: Address field: it should look like this.

1. Choose Insert > Text (Objects > Insert > Text).

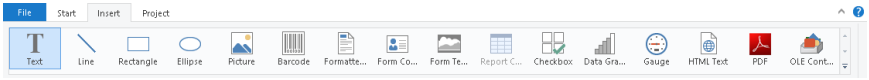


Figure 4.5: Tab "Insert"

2. Pull the object to the required size.
3. The formula wizard will now appear, which you can use to define the contents of the text object.

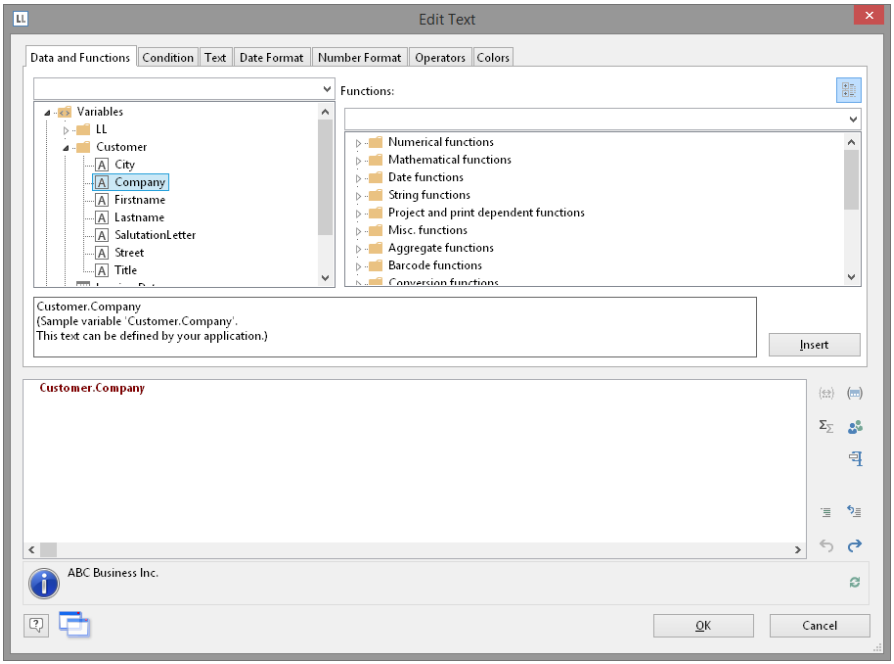


Figure 4.6: Formula wizard with variable

This dialog consists of a series of tabs. On the "Data and Functions" tab, select the variable for the company address (company) from the list of available variables and fields.

You will see an auto filter field above the list of data. This means that you can enter "Company" to display all fields and variables containing this expression.

Select the variable that you want by double-clicking and confirm your selection with OK. You have now defined the first line of the address field.

4. A text object can hold as many paragraphs as you want and they can all have completely different display properties. You can add more paragraphs by means of the Text Tools (mini-toolbar). Choose "Append" to define an additional line.

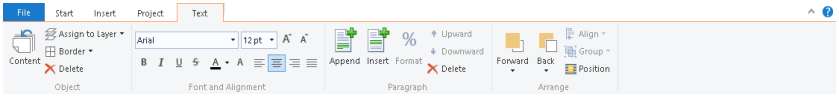


Figure 4.7: Adding another paragraph via the Text Tools

5. The formula wizard will now appear, which you can use to define the contents of the paragraph. Now enter the first name and the last name of the recipient. First choose the "Firstname" variable.

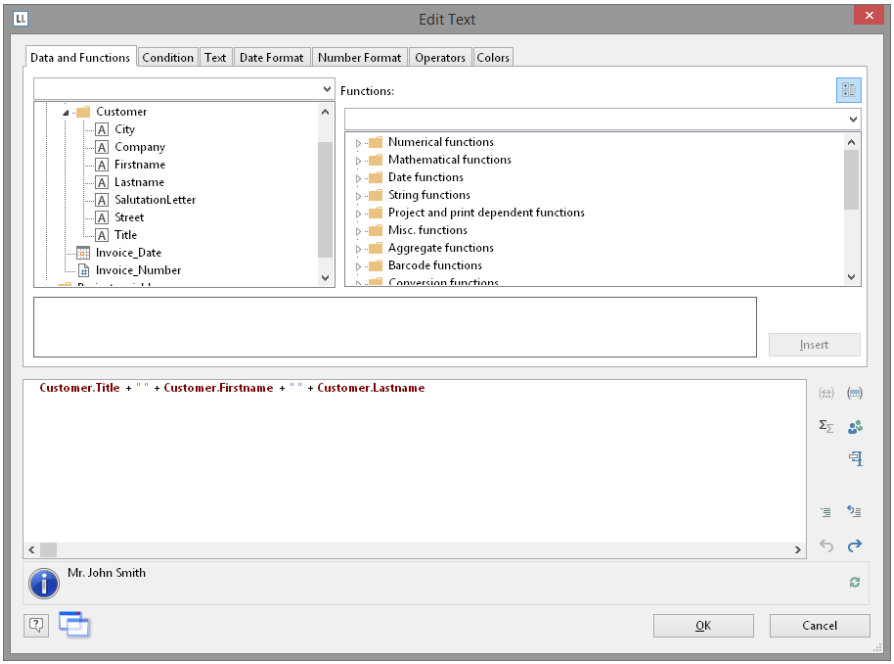


Figure 4.8: Linking variables and text

6. You should insert a space before choosing the "Lastname" variable to prevent the contents of the two variables from being placed directly end to end. A space is simply "Text". Fixed text must be enclosed in quotation marks. So now enter "+" as a joining operator followed by " " for the space.
7. Now select the "Lastname" variable. You must of course also join this with "+".
8. Now continue with the other variables: street and city. You have now completed the address field.

Figure 4.9: Text field with 4 paragraphs

4.4.4 Adding the Date and Page Number

Use a text object once more to add a date and the page number to the letter.

1. Choose Insert > Text (Objects > Insert > Text).
2. Pull the object to the required size.

3. The formula wizard will now appear, which you can use to define the contents of the text object. Switch to the "Date Format" tab.
4. Select the date format that you want. When you do so, the Now() function will be inserted automatically in the Date$() function. This outputs the current date in the format that you have chosen.
5. Then create a further text object in the footer area for the page number. In the result area of the formula wizard, enter the Page$() function directly to output the page number.

4.4.5 Adding Formatted Text for the Letter

You output the text for the letter with the formatted text object. As opposed to the normal text object, this object also lets you change the formatting of the text within a line.

1. Choose Insert > Text (Objects > Insert > Text).

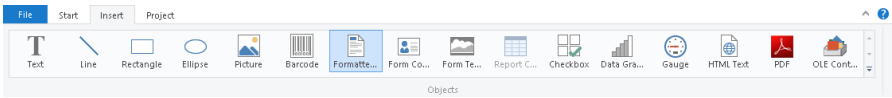


Figure 4.10: Tab "Insert"

2. Pull the object to the required size.
3. A dialog appears where you can type in the letter in the form of continuous text.

   Alternatively, you can select an RTF variable from the "Source" drop-down list if available.

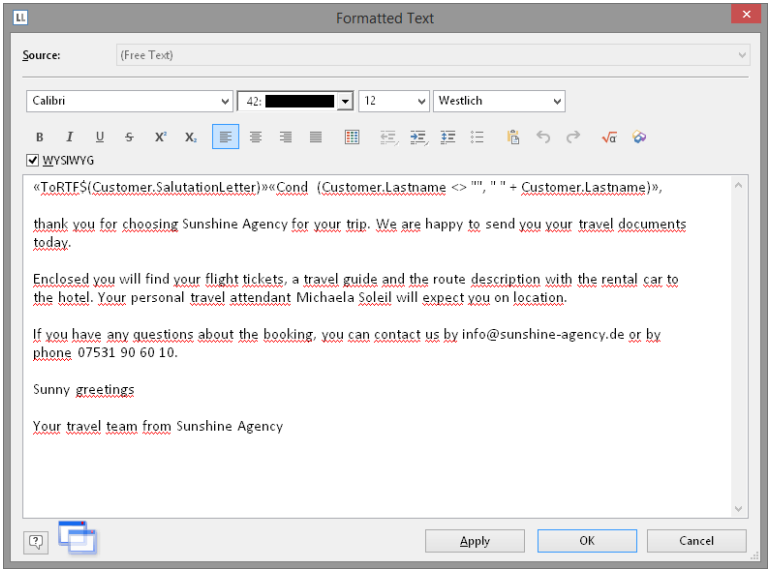


Figure 4.11: Formatted text object dialog

Expert tip: If the current RTF object is appended to another RTF object for which the "Page break" option is enabled, the "Transfer exceeding text of ..." option is available as a data source ...". If you select this option, you cannot enter text in the RTF object because the (remaining) text will be transferred automatically from the other RTF object (e.g. for a two-column print).

4. If you click the formula button, the formula wizard will appear here as well, which you can use to insert variables.

   You want to address the recipient personally so you now create the salutation. When doing so, please make sure that you do not enter an unnecessary space character at the end of the salutation formula if the "Name" field in "Dear Sir or Madam" salutations is to be empty. One possibility for a perfect salutation formula is the use of Rtrim$() e.g.:

   «Rtrim$(Recipient.Salutation + " " + Recipient.Lastname)»,

5. Now write the letter text. You have various formatting options at your disposal. You create a tab stop with CTRL+TAB.

   Or you can create the letter text or pictures and graphics in your normal text processing program (e.g. MS Word), and insert them into this dialog with copy CTRL+C and paste CTRL+V. The layout cannot always be taken over 1:1.

6. The "WYSIWYG" (What You See Is What You Get) button shows you the hyphenation based on the object size. This is just an approximate guide and can differ slightly.

7. Page breaks are created automatically if the available space is no longer sufficient and the "Page break" object property is set to "Yes". If you want to trigger a page break manually, you can do this by means of the context menu. Select the **Pagebreak** control character.

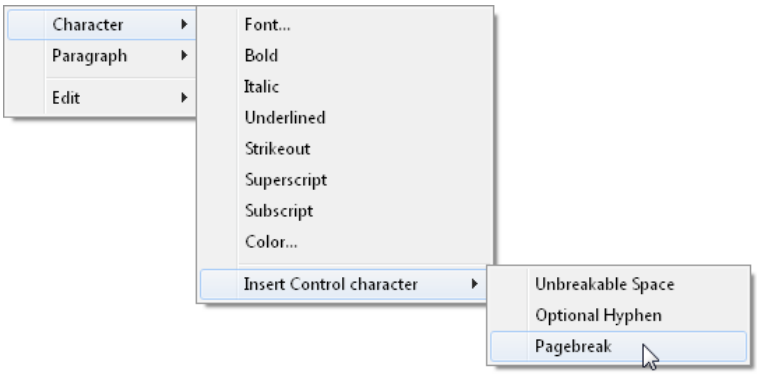


Figure 4.12: Context menu for a user defined page break

4.4.6 Adjusting the Position of the Letter Text for Following Pages

Because of the address field, the text starts further down on the first page of a letter. So that the text begins at the top margin in multiple page mail merge projects, a condition can be applied to the position (top, height) of the formatted text object with which the object can be moved upwards and increased in height on following pages.

1. Select the formatted text object.
2. Select the "Position.top" property and set the Cond(Page()=1,4.0,2.0) condition.
3. Select the "Position.height" property and set the Cond(Page()=1,7.0,9.0) condition.

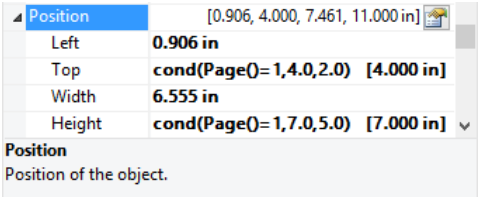


Figure 4.13: Specifying the position with a formula

4.4.7 Assigning Objects to the Layer

So that the objects for address, company logo and date are only printed on the first page, you can assign these objects to the corresponding layer.

1. Hold down the CTRL key and select the objects for the address, company logo and date.
2. Right-click to open the context menu and choose "Assign to Layer".
3. A selection dialog will now appear in which you can select the "First page" layer. Confirm your selection with OK.
4. The objects are now assigned to the "First page" layer. This is indicated by the fact that the objects are shown in the layout preview in green, the color assigned to this layer.

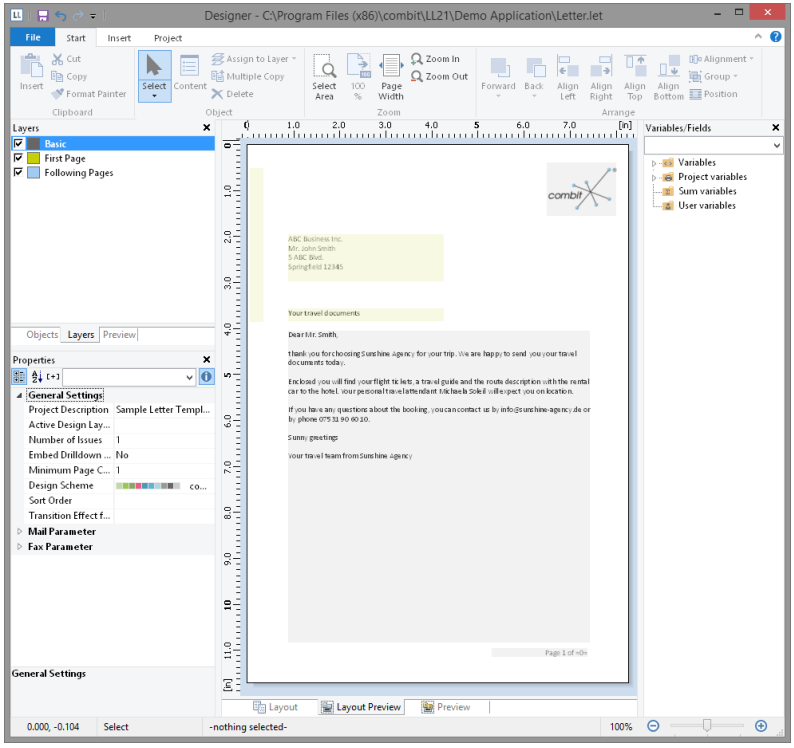


Figure 4.14: Objects are shown in different colors

5. The "formatted text" object remains assigned to the base layer so that it will be printed on all pages.

5. Creating Professional Tables

In this chapter, we will extend the previous examples to include more functions, output grouped data, use appearance conditions and layers to allow multiple pages to be output and add more elements to the report container.

5.1 Working with the Report Container

You use the "Report Container" object to add a table. As the name says, a report container can hold several objects.

Tables, charts, crosstabs and Gantt charts can be added in any order, even as sub-elements of tables. This lets you define sub-reports with almost any relationships between tables.

In addition to a report container there can be any number of other report containers and in addition also separate charts, cross tables or Gantt charts.

Hint: The report container and the possibility to insert separate charts, crosstabs or Gantt charts is not available in every application. In applications without report container you can use the "Table" object instead.

5.1.1 Report Container and Object list

You define new elements in the "Objects" tool window along with the hierarchical structure that you want.

- All actions are available in a context menu. There are additional buttons in the top toolbar for the frequently used actions.
- To add a new element to the report container, select the "Append an element" or the "Append a sub-element" button. Sub-elements are only possible with tables.
- All elements are shown here with object type and data source [relation name, sort name].
- The currently selected item will be highlighted in the workspace. By using the checkboxes in the tool window "Objects", you can toggle the visibility of elements, sub elements and branches.

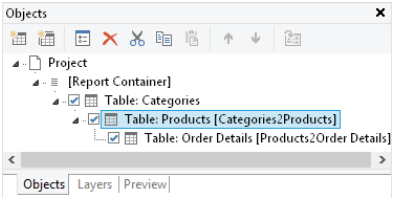


Figure 5.1: "Objects" tool window

5.1.2 Multiple Report Containers

Using multiple report containers is also supported; for example side-by-side reports can be created. The data sources of the report containers and their elements can be different.

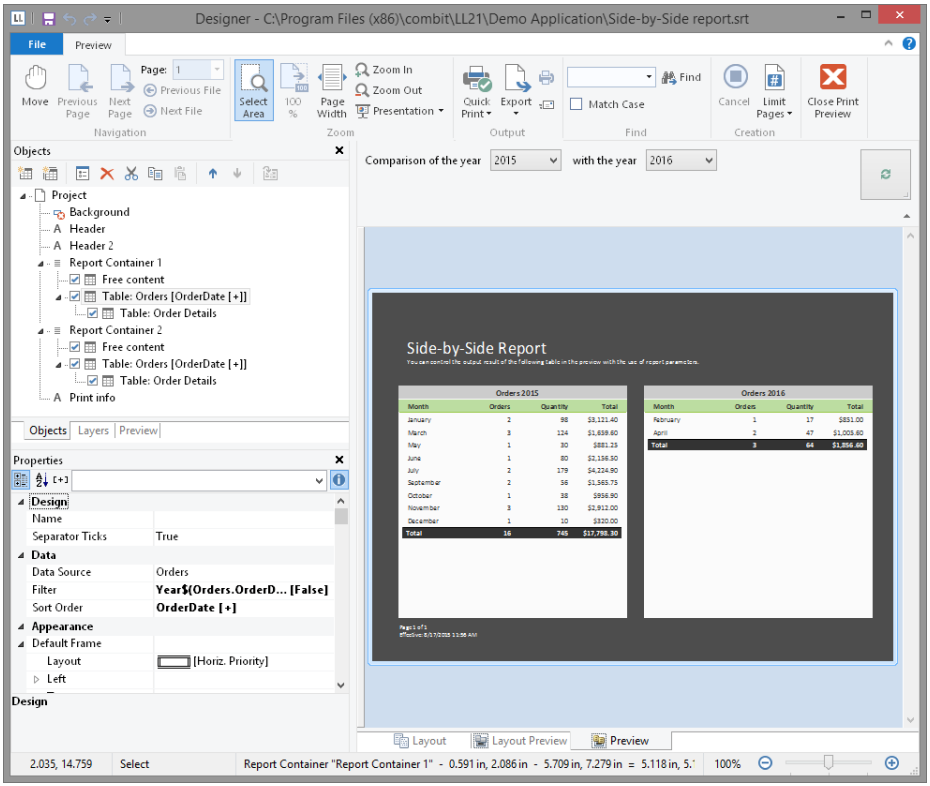


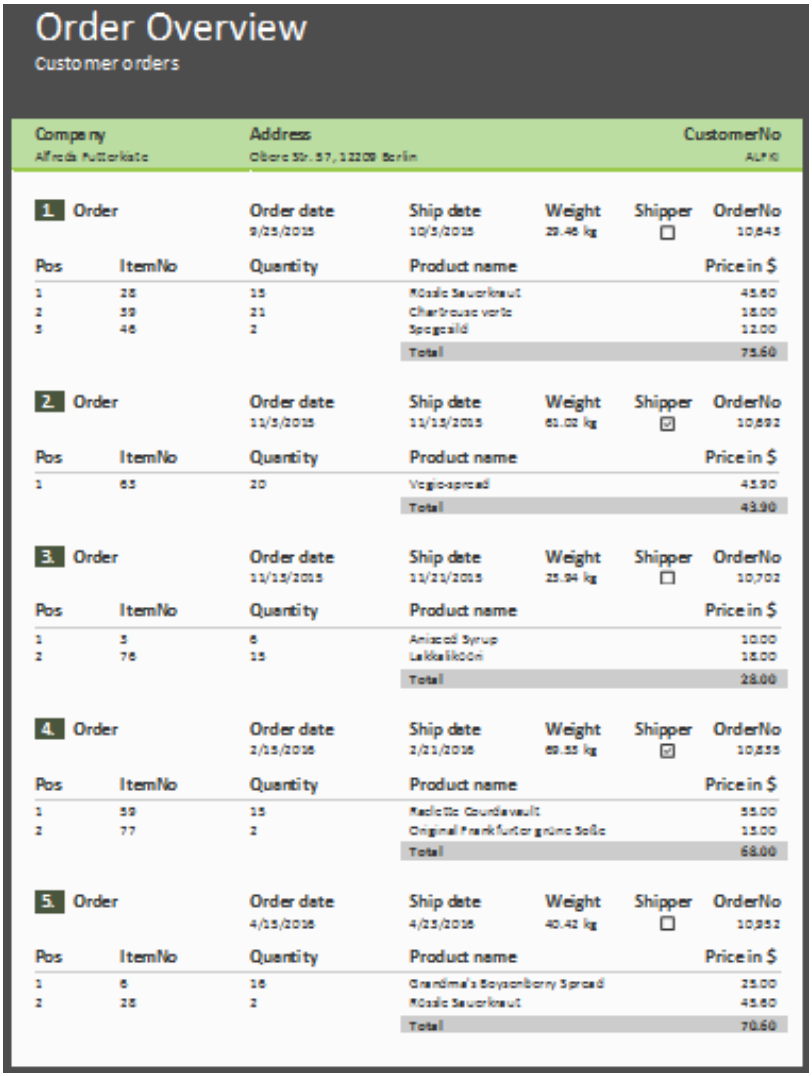
Figure 5.2: Side-by-Side report with two report containers

5.2 Practice: Defining sub reports correctly

Let us assume that you want to produce a list of all customers, showing the orders of the respective customers and all order items.

The data source provides the relationally linked tables Customers > Orders > Order_Details.

You want the result to look roughly like this:



Order Overview

Customer orders

Company	Address	CustomerNo
Alfreds Futterkiste	Obere Str. 57, 12209 Berlin	ALFKI

1 Order	Order date	Ship date	Weight	Shipper	OrderNo
	9/25/2015	10/5/2015	29.46 kg	☐	10,643

Pos	ItemNo	Quantity	Product name	Price in $
1	28	15	Rössle Sauerkraut	45.60
2	39	21	Chartreuse verte	18.00
3	46	2	Spegesild	12.00
			Total	75.60

2 Order	Order date	Ship date	Weight	Shipper	OrderNo
	11/5/2015	11/13/2015	61.02 kg	☑	10,692

Pos	ItemNo	Quantity	Product name	Price in $
1	63	20	Vegie-spread	43.90
			Total	43.90

3 Order	Order date	Ship date	Weight	Shipper	OrderNo
	11/15/2015	11/21/2015	23.94 kg	☐	10,702

Pos	ItemNo	Quantity	Product name	Price in $
1	3	6	Aniseed Syrup	10.00
2	76	15	Lakkalikööri	18.00
			Total	28.00

4 Order	Order date	Ship date	Weight	Shipper	OrderNo
	2/15/2016	2/21/2016	69.53 kg	☑	10,835

Pos	ItemNo	Quantity	Product name	Price in $
1	59	15	Raclette Courdavault	55.00
2	77	2	Original Frankfurter grüne Soße	13.00
			Total	68.00

5 Order	Order date	Ship date	Weight	Shipper	OrderNo
	4/15/2016	4/23/2016	40.42 kg	☐	10,952

Pos	ItemNo	Quantity	Product name	Price in $
1	6	16	Grandma's Boysenberry Spread	25.00
2	28	2	Rössle Sauerkraut	45.60
			Total	70.60

Figure 5.3: Hierarchical invoice list

To achieve this, proceed as follows:

1. In Choose Insert > Report Container (Objects > Insert > Report Container).

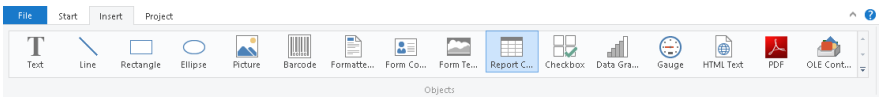


Figure 5.4: Tab "Insert"

2. In the workspace, hold down the left mouse button and pull the object to the required size.
3. A selection dialog will appear for the chosen element type. Choose the "Table" element type.

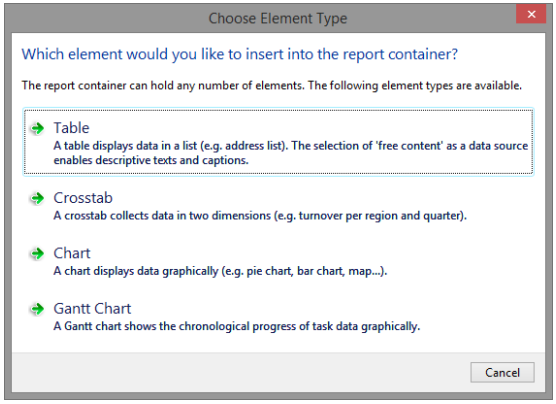


Figure 5.5: Choosing the object type

4. You specify the data source in the following dialog. All available tables are shown hierarchically, in other words, under the tables, you will find the relational tables in each case.

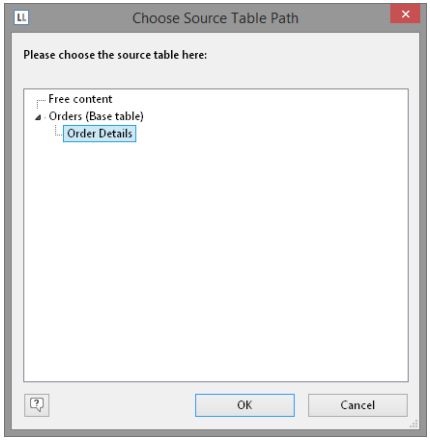


Figure 5.6: Choosing the data source

For the list of invoices, you need the following structure: Customers > Orders > Order_Details.

You have 2 alternative procedures at this point:

a) You select the "Customers" table to first create the "top" table. This corresponds to a top-down procedure; meaning that you then add the

"Orders" sub-table followed by the "Order details" sub-table by means of the "Report Structure" tool window.

b) Or you choose the structure that you want right from the start by selecting the "lowest" table. This corresponds to a bottom-up procedure, meaning that you create all three tables starting by designing the "lowest" table.

5. You will be using the second method in this example. Accordingly, you select the table "Customers > Orders > Order_Details".
6. A selection wizard will appear with all the fields in the "Order_Details" table.

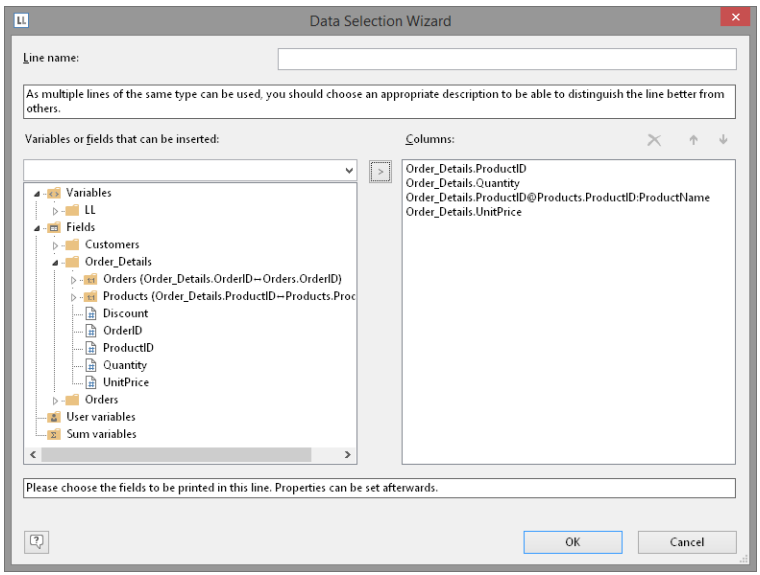


Figure 5.7: Data Selection Wizard

In this dialog, now choose the columns for this sub-table. For example, double-click the "ProductID", "Quantity", "UnitPrice" and "ProductName" fields from the "Products" table which has a 1:1 relationship. This will add the fields to the "Columns" area. You can change the order with the arrow button.

7. All tables will now be displayed in the workspace, the currently selected item "Order_Details" will be highlighted in the workspace.
   - The selected fields are displayed in the data line, in other words, the data line contains the data.
   - In addition, a header line is automatically produced. Header lines are used mostly as column titles, i.e. the selected field names are now shown here as text.
   - The width of the columns adjusts automatically. You can adjust the width of a column manually by moving the separating line to the right or the left with the mouse.

> **Note:** This changes all table columns whose separators are within +/-2 mm from the mouse position. If you hold down the CTRL key, the action will only be carried out for the line on which the mouse is positioned. If the option "Change width individually" is enabled (Table> Lines and Columns or CTRL+M or project option "Column width modification affects next column"), you can alter the column width while making the next column smaller.

8. To define the columns of the "Orders" table, double-click the table in the "Objects" tool window.

5.3 Modifying the Fields and Columns

There are two possibilities for adding additional columns to tables or for editing and formatting them in detail.

5.3.1 Table Tools and Mini-toolbar

If you insert a table, the **Table Tools** and the tab "Table" are displayed. The tab contains the commands you need for working with table objects. When you have finished the work on the text object, the Table Tools are hidden.

Optionally, you can activate a mini-toolbar for the tabel-objects (File > Options > Workspace).

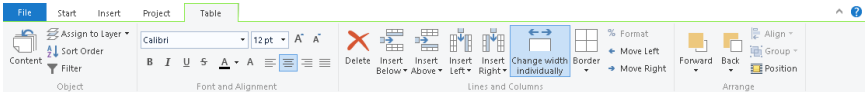


Figure 5.8: The Table Tools

With the **Table Tools** you can define a new line, insert a new row, move selected rows/cells to the left/right, borders, apply fonts, font sizes, text colors and formatting as well as arrange objects.

- To select a field, click in the top left corner of the field. Hold Ctrl or Shift to select multiple fields or a complete range.
- To select a complete line, click onto the bar on the left. Hold Ctrl or Shift to select multiple paragraphs or a complete range.
- To select a complete column, hold Alt. Hold Ctrl or Shift to select multiple columns or a complete range.

5.3.2 Object Dialog

Use the object dialog for more advanced functionalities. You open this dialog via the corresponding button in the mini-toolbar or by double-clicking the element in the "Objects" tool window.

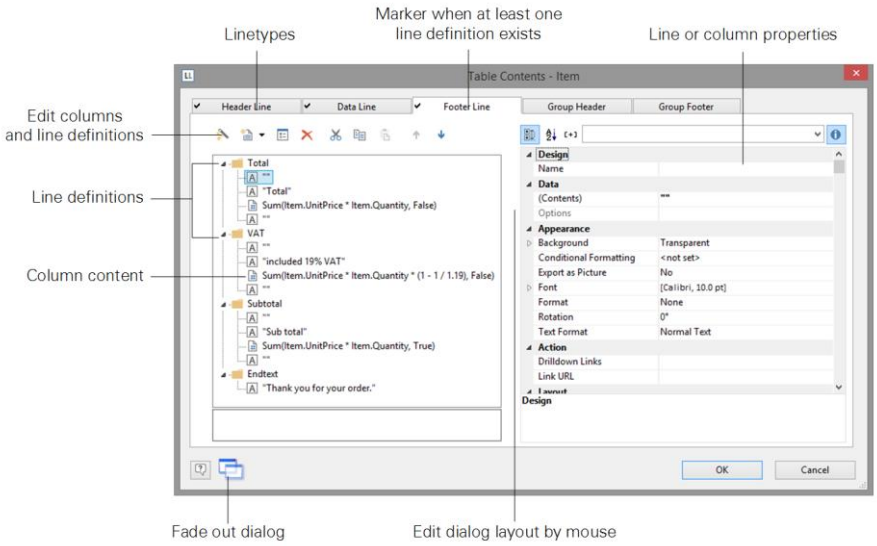


Figure 5.9: Object properties dialog for tables

There is a tab for each type of line where you can specify the different definitions and columns for the respective line. The following types of line are available: header line, data line, footer line, group header, group footer. A checkmark on the tab indicates that a line type has one or more line definitions.

- Header lines are mostly used as titles for the columns of the table.
- Data lines contain the formatting for the actual table rows and the data that is to be shown in the table.
- Footer lines are displayed at the very end of the table and can hold final information about the data lines that are output above.
- Group header and footer lines are used to structure the data lines by means of "Intermediate headings" and "Intermediate footers".

All line types can be defined independently of one another.

- This means that the columns of a header line can have a different appearance as the data lines or footers that follow.
- You can also create different line layouts or line definitions for the individual line types. It is then possible to activate the different line definitions with special appearance conditions as required.

5.3.3 Variables-/Field-List and Drag & Drop

The Variables-/Field-List (Project > Variables/Fields) shows all available variables and fields of the current project. To add more columns to existing rows you can simply

drag the desired fields from the list onto the corresponding position with the mouse (drag & drop).

The field can be inserted to the left or right of the corresponding column, a symbol shows the insert position. The column (standard width 30mm) will be inserted in the corresponding row. Please note that columns could be created in the non-visible area.

For numeric fields, a footer line with totals is created automatically. If you hold down the CTRL key, no footer line will be created.

5.4 Defining Multiple Line Layouts

You can define different layouts for each type of line. Depending on the appearance conditions, the appropriate layout is used in each case according to the situation. For example, you can output two table lines for each data record in this way:

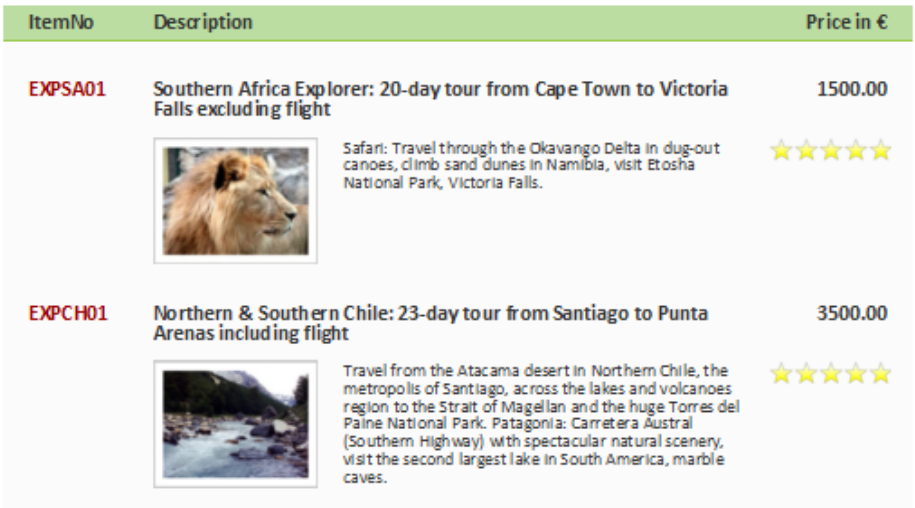


Figure 5.10: Two line definitions

Proceed as follows to create table lines in the object dialog.

1. First select the line type that you want to edit by clicking the relevant tab, e.g. Data Line.
2. Now choose "Insert Table Line" in the context menu. Alternatively, you can select an existing *Line* definition and then click the "New (Append line definition)" button.
3. In the "Choose a Table Line Definition" dialog that follows, you have the option of
   - using an already existing layout as a template for the new line definition (very useful if the layout is similar).

- starting the data selection wizard (very useful if you want to create several columns in one operation)
- or creating an empty line definition so that you can then add the columns by means of the object dialog.

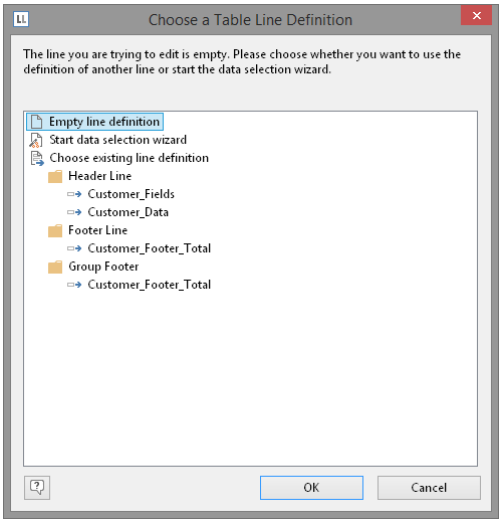


Figure 5.11: Choose a Table Line Definition

4. You have now created the new line. Edit the columns as described in "Defining Column Contents ". Change the order of the line with the arrow button or with Drag & Drop.
5. You can then specify the appearance of the new line as a whole. Various properties are available for this including:
   - "Appearance Condition" with which you can specify when the line is to be printed. This is useful if you define multiple line layouts that are to be printed depending on certain values. The familiar dialog for defining logical expressions opens up here.

     Example line 1: Subtotal not on last page

     Appearance condition: not Lastpage()

     Example line 2: Grand total only on last page

     Appearance condition: Lastpage()
   - Name of the line e.g. "data first line". This makes it easier to find the line in complex layouts.

- Display in Designer: with this property, you can hide the lines in the workspace – this is very useful if you have a lot of line definitions.
- Spacing (margins): here you define the top, bottom, right and left spacing of the line. The "top" or "bottom" values cause a corresponding space between the individual table rows. With the "left" and "right" spacing values, you can specify the margin in relation to the table object, i.e. you can indent lines or columns.
- The "Default Font" property sets the font for the entire table row. Newly inserted columns appear initially in this font.
- Outline Level (index level) of the bookmark in preview mode or for PDF export.

Also see chapters "Overview of Properties" and "Defining Group Lines".

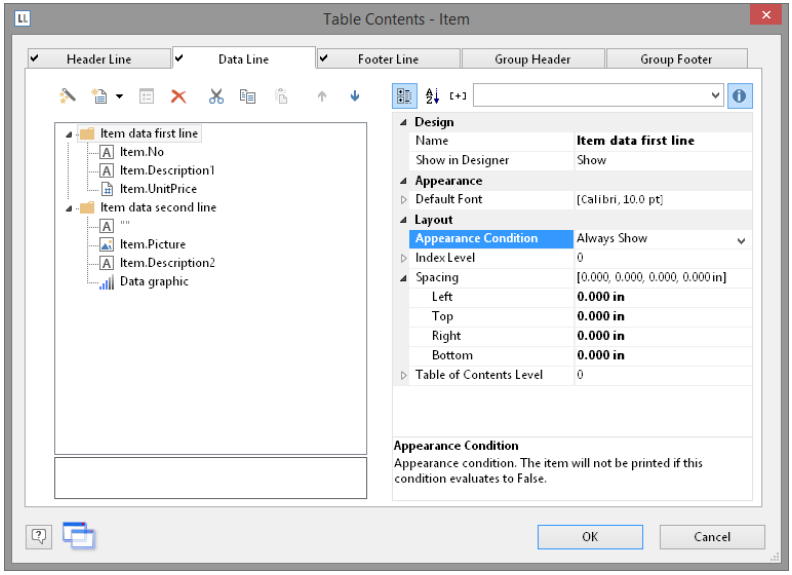


Figure 5.12: Line properties

5.5 Defining Column Contents

You can define as many columns as you want for each line. You must only make sure that these columns can be displayed within the width defined for the table.

The individual columns are shown in the object dialog as a tree structure. The buttons let you edit, delete, cut, copy, insert and move the selected columns. You can also move columns outside of the line definitions by using Drag & Drop.

Proceed as follows to create new columns in the object dialog:

1. First select the line in which you want to insert a new column.

2. Now choose "Append column" in the context menu. (ALT+INS). Alternatively, you can select an existing *Column* definition and then click the "New (Append column)" button or the small downwards arrow next to this button to specify the type.
3. Each column has a certain type. Various properties are available for the column type including: Text, Picture, Barcode, Formatted Text, Form Control, table, Chart, Checkbox, Data Graphic, Gauge, HTML Text, PDF and OLE container. When selecting a field, this data type will be set automatically.
4. To define the contents, the familiar formula wizard will appear in which you can define the column contents in the form of expressions. You will find more information about this under "Variables, Fields and Expressions".
5. Now define the column's properties. Each column in a line can be edited and formatted separately. Select the column that you want in the tree structure in the object dialog.

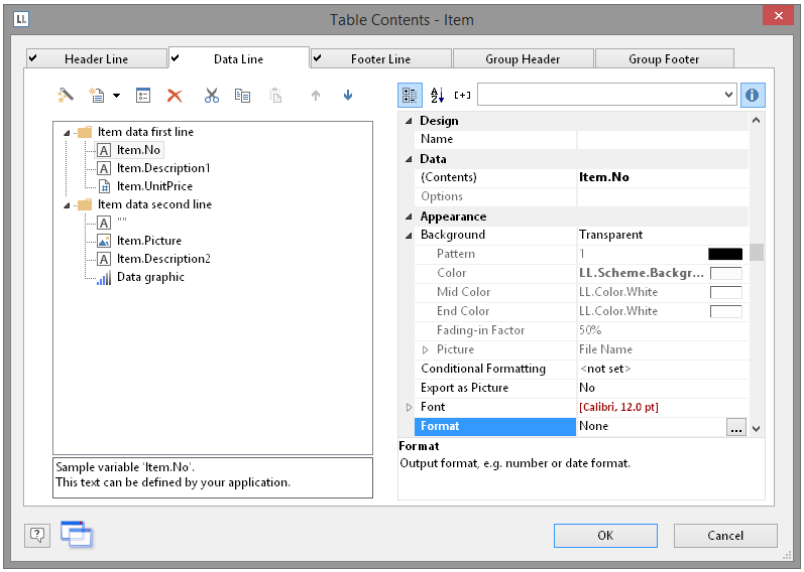


Figure 5.13: Column properties

To select multiple columns, hold down the ALT or the SHIFT key. Various properties are available including:

- Formatting e.g. as number or currency.
- Name of the column: this will help you to maintain an overview with complex expressions. If you change the name directly in the tree structure, your change will also be applied as "content" where appropriate.
- You can specify when this column is to be printed with an "appearance condition". This is useful if you define multiple columns that are to be printed

depending on certain values. The familiar dialog for defining logical expressions opens up here.

- Rotation of the content in increments of 90°.
- Background, frame, font, vertical and horizontal alignment.
- A fixed height for the field irrespective of the content.
- The column width.

Also see chapter "Overview of Properties".

5.6 Defining Group Lines

Group lines are a special type of line. They are used to group together the data lines that are to be printed.

You can use the "Group by" line property to specify how the data is to be grouped. This means that the line is printed whenever the result of the expression changes from one data line to the next. If you don't enter an expression, the line will not be printed and the property is highlighted in red in the property window.

A group header is printed accordingly *before* the data line is output, e.g. "Item group XYZ" group heading.

A group footer appears after the condition of the "Group By" property has changed, in other words, *after* outputting the data line. Group footers are suitable e.g. for totals of data within a group.

In the report container you can also output a group sum in the group header with the Precalc() function, e.g. Precalc(Sum(Item.UnitPrice, <GroupBy-String>)).

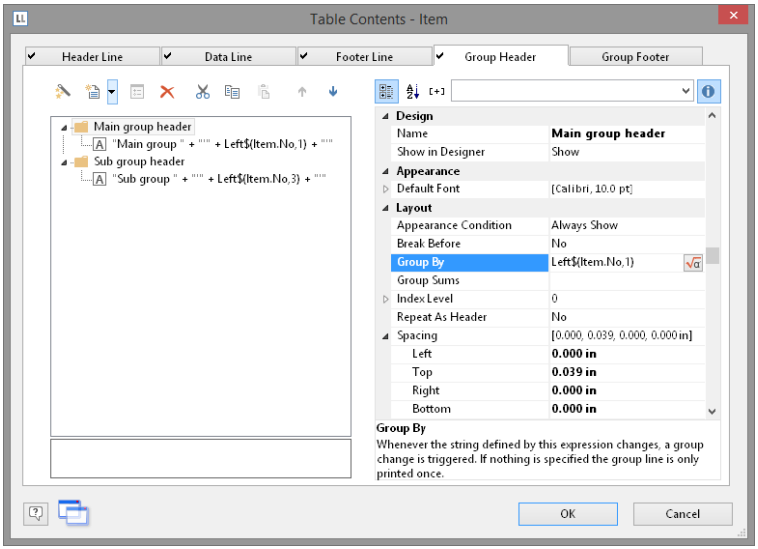


Figure 5.14: Group Headers

Example: Grouping by the first letter of the "Item.No" field.

Item no	Barcode	Description	Price in €
Main group 'E'			
Sub group 'EXP'			
EXPSA01		Southern Africa Explorer: 20-day tour from Cape Town to Victoria Falls excluding flight	1500.00
EXPCH01		Northern & Southern Chile: 23-day tour from Santiago to Punta Arenas including flight	3500.00
EXPMAL01		Maldives diving trip: 14 days, southern Male Atoll, Paradise Beach **** excluding flight	1800.00
EXPHK01		Hong Kong and Bali: 2 weeks, including flights, accommodation, excursions	1760.00
EXPYUC01		Yucatan, On the Trail of the Maya, 2-week round trip, excluding flight	1200.00
EXPLON01		London, sightseeing tour with boat trip on the Thames	60.00
		6 Items in 'EXP' =	9820.00
Sub group 'EXC'			
EXCPAR01		Paris, visit to the Louvre including guided tour and admission	40.00
		1 Items in 'EXC' =	40.00
		7 Items in 'E' =	9860.00
		7 Items in total	9860.00

Figure 5.15: Group lines in an article list

1. Create a new line definition on the "Group header" tab. Enter the following expression for the content of the column:

   "Main group: ' + Left$ (Item.No,1)"

   The result of the expression "Left$ (Item.No,1)" is the first character of the "Item.No" variable. Whenever the first letter of "Item.No" changes, the text "Main group: " and the first letter in each case will be printed.

2. Enter "Left$ (Item.No,1)" as the condition for the "Group By" property.

   With each new first letter, a corresponding intermediate header will be printed in the list.

3. Multiple line layouts are possible with group headers as well. In this way, you can produce hierarchically structured intermediate headers. For example, you can define a line layout that is produced, as in the above example, based on the first letter of the "Item.No" variable. In addition, you define a second line layout that produces intermediate headers based on the first three characters of "Item.No".

4. Create a new line grouping for the sub-group header in the same way. Enter "Left$ (Item.No,3)" as the condition for the "Group By" property.

Enter the "sub-group" for the content of the column: ' + Left$ (Artikel.Nr,3)": When the first 3 letters change, a corresponding intermediate header will be printed in the list.

Along with the properties of the "normal" lines, you also have the following at your disposal:

- Group sums: You can set sum variables to 0 here once they have been output in order to produce group sums.
- Page break before outputting a group header or break after outputting a group footer.
- The option of always displaying the group header additionally at the start of the table if the group has been separated by a page break.

Also see chapter "Overview of Properties".

5.7 Tables in columns (Nested Tables)

You can output detailed data from a sub-table in a column. For example, if you would like to output all of a client's orders to the right of a client's name, create a column of type "Table", and then output the detailed data.

You can edit the properties of the table object by selecting the table. Double-click to display the familiar table content dialog.

You can also use the action "Attach sub-table" to attach additional tables to this table, e.g. the sum of the various order items.

Customers	Orders	Amount
Alfreds Futterkiste Germany	25.09.2015	1.086 €
	03.11.2015	878 €
	13.11.2015	330 €
Ana Trujillo Emparedados y helados Mexico	19.10.2014	89 €
	08.09.2015	480 €
	29.12.2015	320 €
Antonio Moreno Taquería Mexico	28.12.2014	403 €
	16.05.2015	881 €
	13.06.2015	2.157 €

Figure 5.16: Outputting (sub-)tables to columns

1. Create a new element in the report container and select "Table" as the object type.
2. In the dialog that now appears, select the data source. For an assessment of the sales for each client, select e.g. the table "Customers". Select e.g. "Customer.CompanyName" as the field.
3. In this data row, now add an additional column and output the data of a 1:N-concatenated table. Select "Add/attach new column to table row" (ALT+INS) via

the context menu. Alternatively, you may also select an existing column definition and then click on the small down arrow next to this button to determine the type of this column.

4. Select "Table" as column type and then e.g. the column "Orders.OrderID". Although the data row will not be output (because we will be suppressing it), a field is required so that the table will be printed at all.
5. Back in the table dialog, select the table "Orders" and set the table property "Data rows > Suppress data rows" to "Yes".

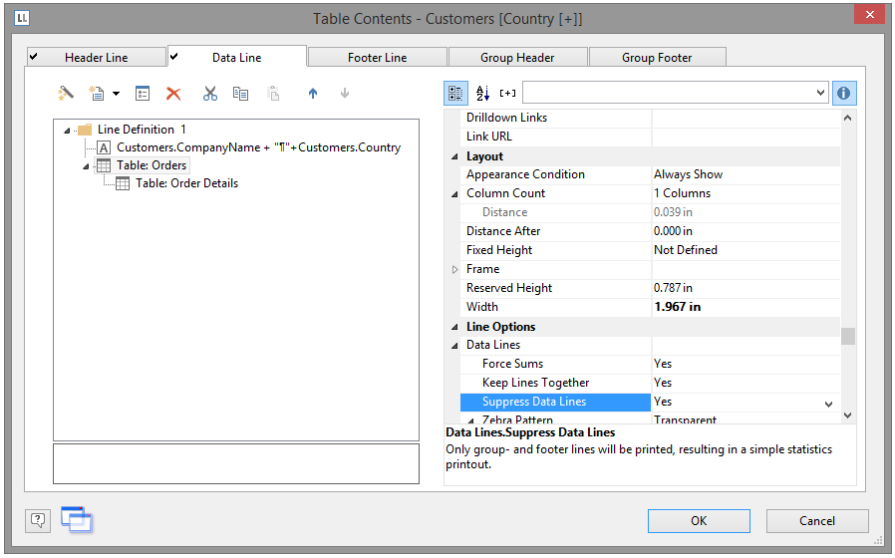


Figure 5.17: Suppressing data rows for a table column

6. Now select "Attach sub-table" via the context menu. Alternatively, you may also select the table and then click on the small down arrow next to this button to attach a sub-table.
7. Select the table "Order Details" as the data source and then the column "Orders.OrderID" once again. Although the data row will also not be output (because we will be suppressing it), a field is required so that the table will be printed at all.
8. Define the sum of the order items as the footer, i.e. in column 1 the order date (Orders.OrderDate) and in column 2, the sum of the sales. You can calculate this by e.g. using the formula "Sum(Order_Details.Quantity * Order_Details.UnitPrice)". These two columns are then output next to the name of the client, as the output of each of the data rows is suppressed.

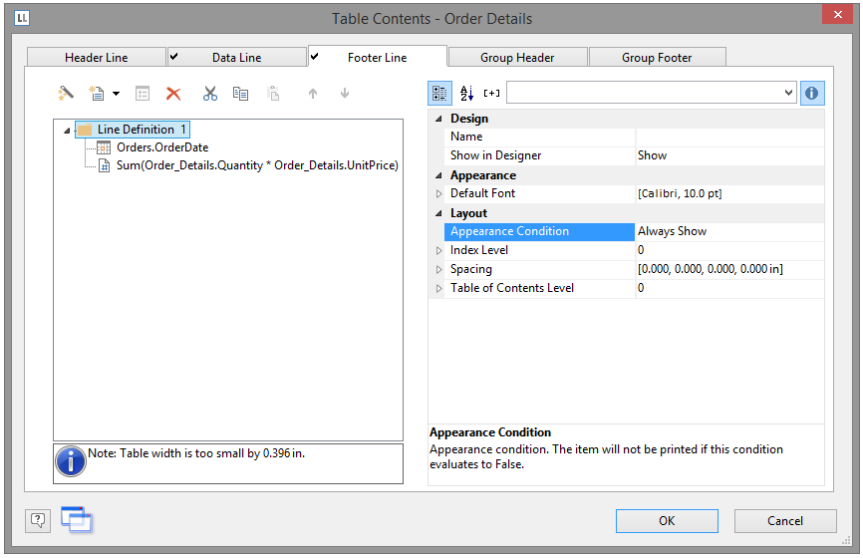


Figure 5.18: Aggregation in the footer

9. Back in the table dialog, select the table "Order Details" and also set the table property "Data rows > Suppress data rows" here to "Yes".
10. The assessment is complete; i.e. you will now see the orders next to the client name, and next to it the sum of the order items (see Figure 5.16).

5.8 Table Layouts

There are various properties and functions which you can use to influence the layout of a table. Also see chapters "Creating Statistical Reports With Footers", "Drilldown Reports (Increase Detail Level)", "Page Layout" and "Overview of Properties".

5.8.1 Align Columns

There are various ways of simplifying the use of table objects.

- If you hold down the CTRL key when reducing the size of a table, all columns will be automatically reduced in size by the same factor.
- The width of the columns adjusts automatically. You can adjust the width of a column manually by moving the separating line to the right or the left with the mouse. This changes all table columns, whose separators are within +/-2 mm from the mouse position. If you hold down the CTRL key, the action will only be carried out for the line on which the mouse is positioned. If the option "Change width individually" is enabled (Table> Lines and Columns or Ctrl+M or project

option "Column width modification affects next column"), you can alter the column width while making the next column smaller.

- If you move the first column separator to the right with the mouse, an empty column will be created in all line definitions.
- Use the function TableWidth() to define the column widths relatively. It returns the width of the table object. Example: With TableWidth()*30/100 the Column takes 30% of the width.
- You can hide Line Types (header, data, footer, group lines) in the workspace. To do this, select the table object and use Visible Line Types in the context menu or the corresponding menu item View> Visible Line Types.
- To align (sub) tables easier with one another, additional tick marks can be shown on the ruler by means of an element property.

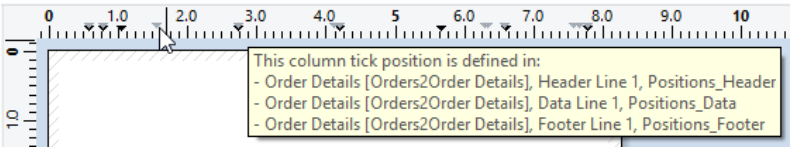


Figure 5.19: Tooltip for a column separator

5.8.2 Fixed Size

The "Fixed Size" property lets you specify that the size of the table is not to be adjusted automatically when fewer data lines are printed than the available space in the table object.

This property is useful to ensure that footers are always printed at the bottom of the page, e.g. if the page number is output in the footer. If the property is disabled, the end of the table automatically moves upwards (and the footer therefore also).

5.8.3 Printing Header Lines and Footer Lines Again

If the print of a table is continued on the following page, the header lines of this table and the outer table will be printed again. To suppress repeated printing of the header lines on the following page, use the FirstHeaderThisTable() function as an appearance condition.

This functionality is also available for footer lines, here you use the LastFooterThisTable() function as the appearance condition. This ensures that footer lines are only output on the last page of the table in the event that the print is continued on the following page due to lack of space.

You will find more information about this in the chapter "Overview of Functions".

5.8.4 Defining the Size of the Table Variably

You can define the height and width of the report containers variably to avoid data being truncated when the page format is changed (e.g. from portrait to landscape).

To do this, select the report container in the "Objects" tool window and use the LL.Device.Page variables and the UnitFromSCM() function to specify the height and width.

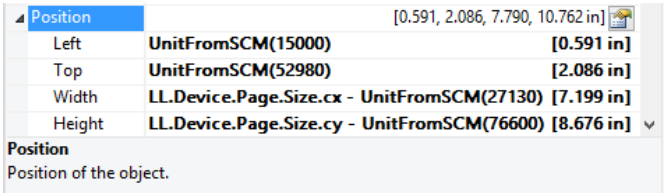


Figure 5.20: Size of the report container defined variably

5.8.5 Forcing a New Page

With complex projects containing hierarchical tables, it is sometimes wise to create a page break before outputting a line of the "top" table.

Alternatively, you may want to have a new page if, after outputting a data line of the "top" table, there is not enough room for the following data lines of the sub-table.

You can handle both cases with the "Pagebreak Condition" property.

For example, in the case of a hierarchical table, in order to output each data line of the main table on a new page, select the main table in the "Objects" tool window and set the "Pagebreak Condition" property to True.

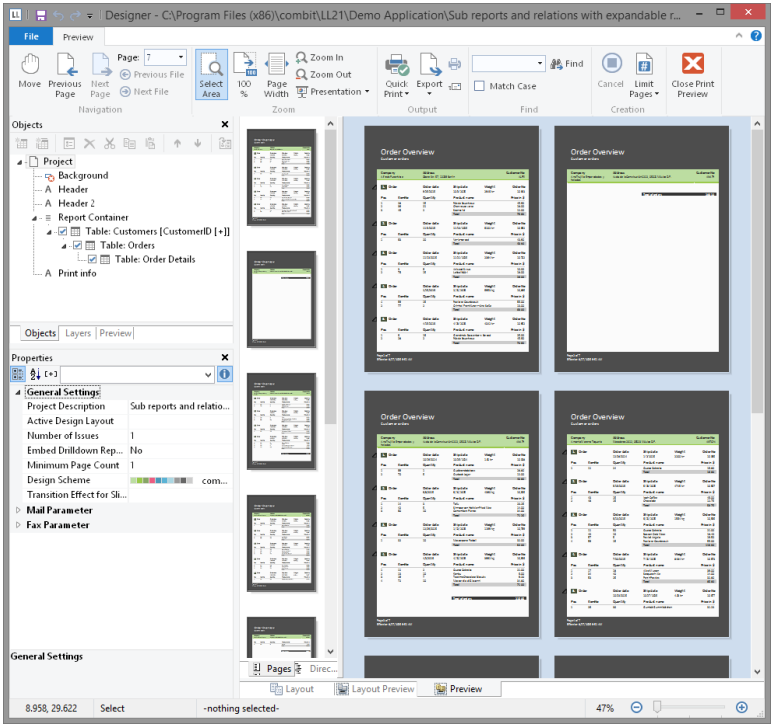
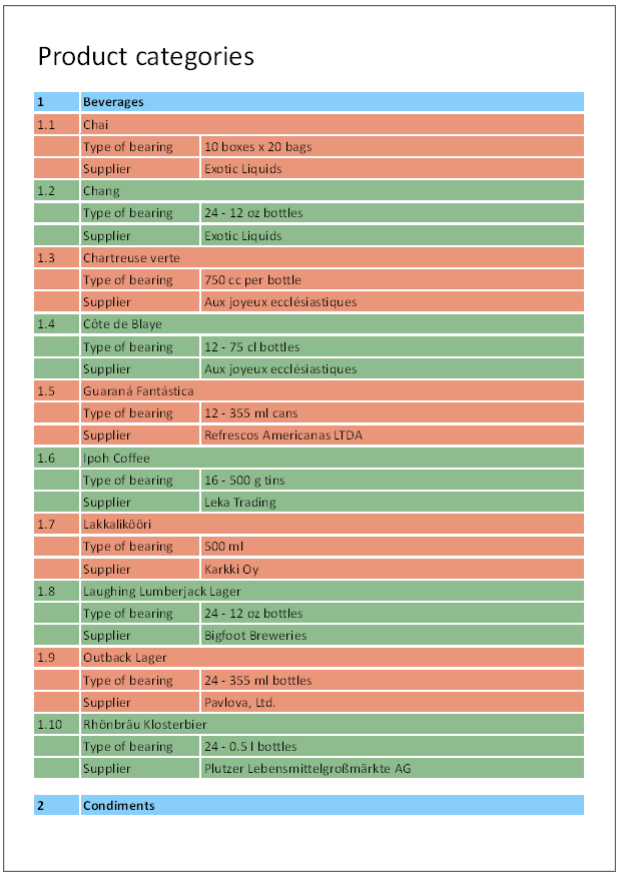


Figure 5.21: Active page break condition

5.8.6 Creating a Conditional Page Break

Let's assume that you want to create a continuous table. However, you want to avoid printing data lines from the main table at the bottom of the table unless there is enough room for at least 3 data lines from the sub-table.

You do *not* want it to look like this:



Product categories

1	Beverages	
1.1	Chai	
	Type of bearing	10 boxes x 20 bags
	Supplier	Exotic Liquids
1.2	Chang	
	Type of bearing	24 - 12 oz bottles
	Supplier	Exotic Liquids
1.3	Chartreuse verte	
	Type of bearing	750 cc per bottle
	Supplier	Aux joyeux ecclésiastiques
1.4	Côte de Blaye	
	Type of bearing	12 - 75 cl bottles
	Supplier	Aux joyeux ecclésiastiques
1.5	Guaraná Fantástica	
	Type of bearing	12 - 355 ml cans
	Supplier	Refrescos Americanas LTDA
1.6	Ipoh Coffee	
	Type of bearing	16 - 500 g tins
	Supplier	Leka Trading
1.7	Lakkalikööri	
	Type of bearing	500 ml
	Supplier	Karkki Oy
1.8	Laughing Lumberjack Lager	
	Type of bearing	24 - 12 oz bottles
	Supplier	Bigfoot Breweries
1.9	Outback Lager	
	Type of bearing	24 - 355 ml bottles
	Supplier	Pavlova, Ltd.
1.10	Rhönbräu Klosterbier	
	Type of bearing	24 - 0.5 l bottles
	Supplier	Plutzer Lebensmittelgroßmärkte AG
2	Condiments	

Figure 5.22: Data lines from the main table without following line

You can avoid this by means of the RemainingTableSpace() function. This function returns a value showing the available space. If you set the parameter to "True", the value will be returned as 1/1000 mm.
If you want to specify that a new page should be started before outputting the data line of the main table if the space remaining is less than 3 cm, enter the following formula for the "Pagebreak Condition" property:
RemainingTableSpace(True)<30000

5.8.7 Keeping Lines Together

If the print of a table is continued on the following page due to lack of space, you can decide whether the lines are to be separated or kept together if possible.

This option is useful for multi-line data lines or for invoice footer lines containing totals. You can use this option with data lines, footer lines, group footers and group headers

5.8.8 Defining Totals and Counters

You define totals and counters with sum variables or the corresponding aggregate functions. You will find more information about this in chapters "Using Functions", "Overview of Functions" and "Sum Variables".

5.8.9 Outputting Free Content Before and After a Table

You can output free text before and after a table. To do this, use the RTF object and link the object to the project as free text via the report container.

Produce a first page with a covering letter for the invoice that we created in Chapter "Creating a Simple Invoice" and an enclosure with the General Terms and Conditions.

1. To add a new element to the report container, select the "Append an element" or the "Append a sub-element" button in the "Objects" tool window.
2. A selection dialog will appear for the chosen object type. Choose the "Table" object type.
3. In the following dialog, select "Free content" as the data source.

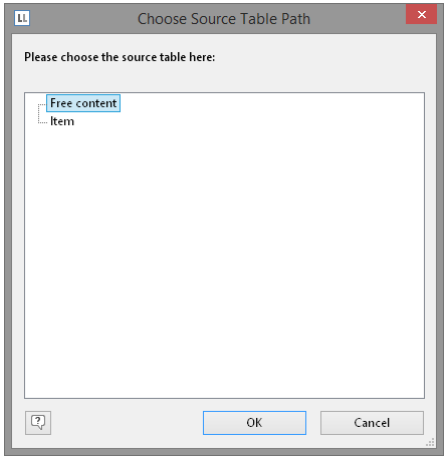


Figure 5.23: Add free content to the report container

4. Then add a column via the properties dialog for the table object. In our case, we want to create the covering letter as formatted text. Therefore, click the small arrow on the right of the button and choose the Formatted Text option.

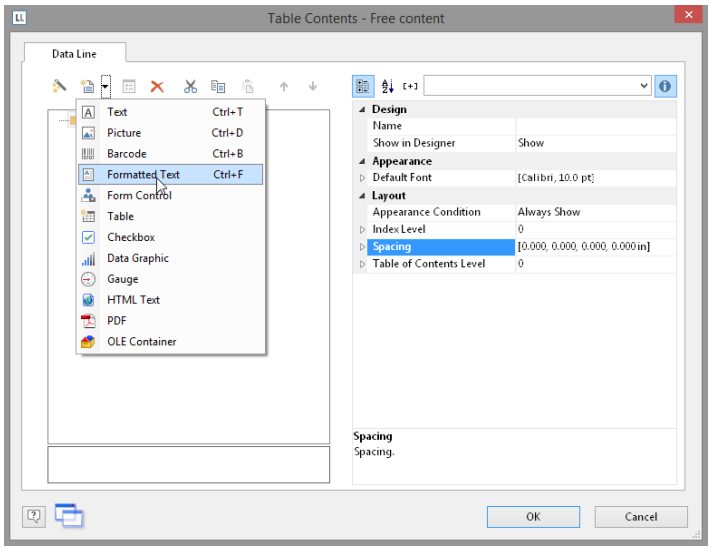


Figure 5.24: Specifying formatted text for the content of the column

5. A dialog appears where you can type in the covering letter in the form of continuous text. You will find detailed instructions for working with formatted text in Chapter "Practice: Create a Mail Merge Project".
6. Please don't forget to remove the (column) frame for free content. The best way is to remove the frame via the "Default Frame" property in the element properties.
7. You may also have to change the layer condition as the covering letter will now be output on the first page.
8. If the General Terms and Conditions are also to be output at the end of the invoice, you must add another free content object to the container after the item table. Then you have several options:
   a) Use the Formatted Text object here as well.
   b) Use the PDF object and include the General Terms and Conditions in PDF format.
   c) Use the LoadFile$() function to load a linked file and enter the path of the file as the parameter as follows LoadFile$ (ProjectPath$()+"\gtc.txt").
   d) For the issue on a reverse side, see "Reverse Side" in Chapter "Report Sections".

5.8.10 Anchored Lines (Overlapping Cells)

Let us assume that you want to output the contents of a column across two lines. You can achieve this by anchoring two lines to each other via the line property "Anchor to row" (Index (1-based) of the row; 0=no anchoring). So the beginning of

the next line definition will be forced to the beginning or the end of another line definition. Hence the cells can overlap.

Note: This function is not supported by all export formats.

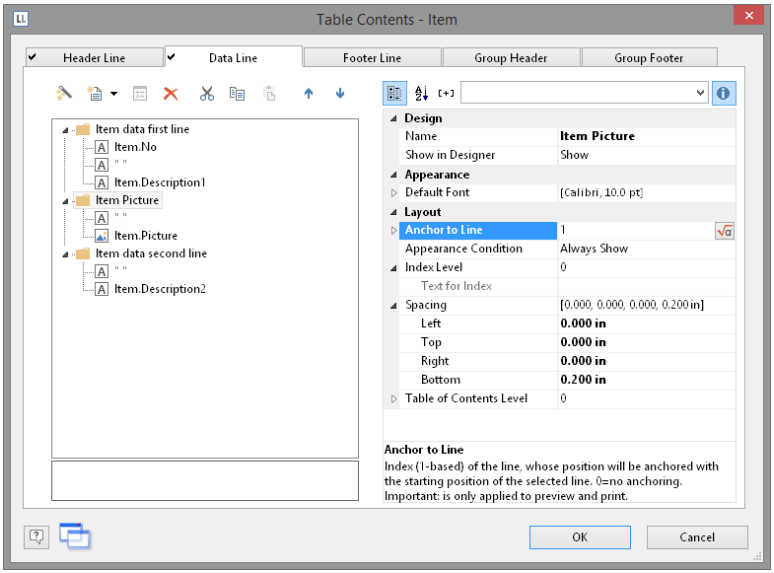


Figure 5.25: Anchor data lines

Let's assume that you want to create 2 lines next to an image column:

1. Define in the first line with 3 columns: "Item.No" (column width 1), empty content, a space (column width 1), "Item.Description" (column width 3).
2. Define in the second line with 2 columns: empty content, "Item.Picture" (both column width 1).

   In the line properties set "Anchor to Row" to "1" to anchor this line to the first line definition.
3. Define the third line also with 2 columns: empty content (column width 2), "Item.Description2" (column width 3).
4. Thus, the second line is printed in the same starting position as the first line and the cells may overlap:

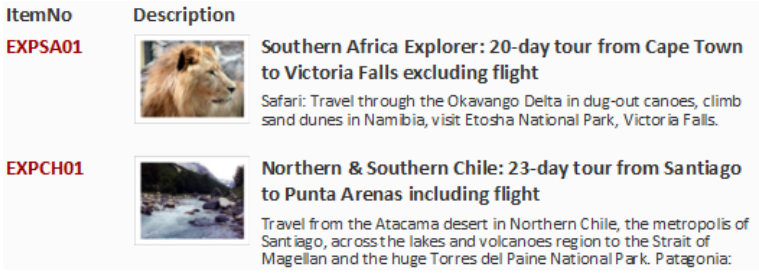


Figure 5.26: Column contents across two lines

5.8.11 Expandable Regions

When you activate the property "Expandable Region", the sub-elements of an element are not printed into the preview at first during printing, and a drop-down symbol will be displayed on the line itself. To be able to use this feature, defined data lines are required.

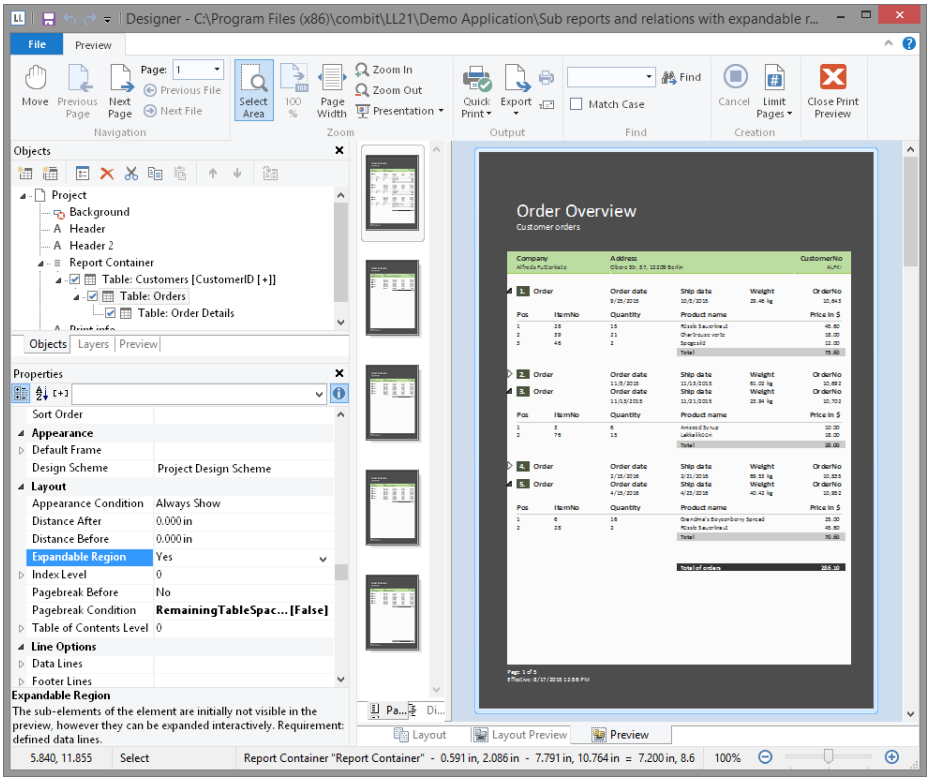


Figure 5.27: Expandable Regions

Clicking on the symbol expands the region for the corresponding line, providing a drill-down option without having to leave the current preview, and without having to design a separate project.

Using the context menu of this drop-down symbol, you can collapse or expand all entries of a layer or expand all details of an entry.

5.9 Sort Orders in the preview

You can configure header fields such that you will be able to change the sort order of the data in the preview by clicking on the corresponding field. This will allow you to e.g. quickly list customers from A to Z.

To do so, proceed as follows:

1. In a customer list, the corresponding desired sort orders for the header fields are defined via the properties "Sort Orders> Ascending" and "Sort Orders > Descending".

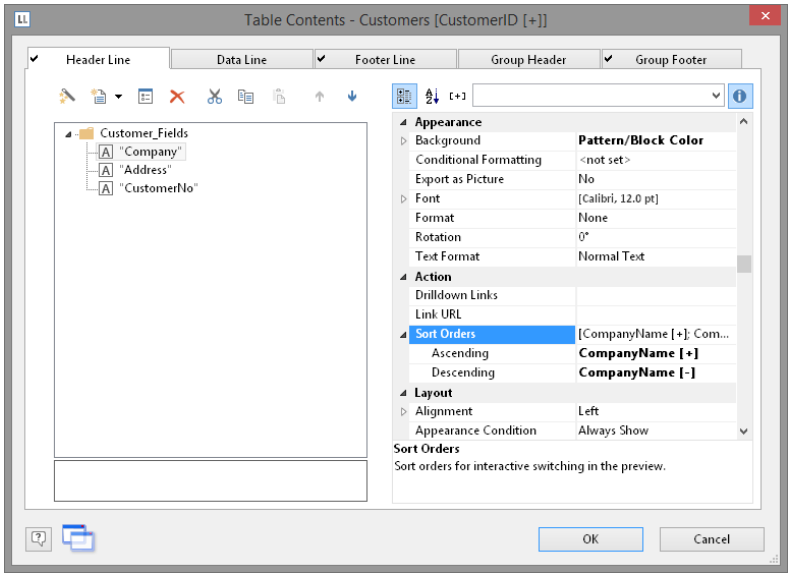
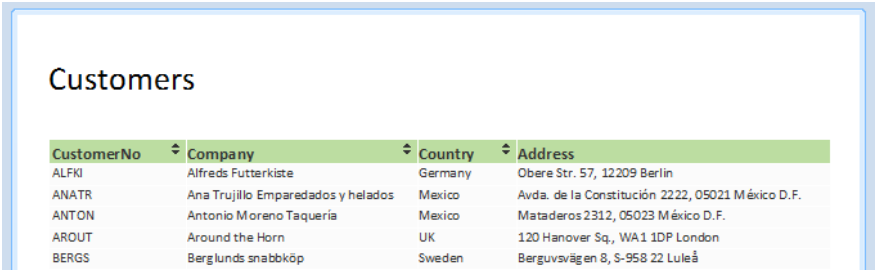


Figure 5.28: Sort Orders for Header Fields

2. Small symbols then appear next to the headers in the preview window which allow the sort order to be changed. Clicking on the country causes the customers to be sorted accordingly.



Customers

CustomerNo	Company	Country	Address
ALFKI	Alfreds Futterkiste	Germany	Obere Str. 57, 12209 Berlin
ANATR	Ana Trujillo Emparedados y helados	Mexico	Avda. de la Constitución 2222, 05021 México D.F.
ANTON	Antonio Moreno Taquería	Mexico	Mataderos 2312, 05023 México D.F.
AROUT	Around the Horn	UK	120 Hanover Sq., WA1 1DP London
BERGS	Berglunds snabbköp	Sweden	Berguvsvägen 8, S-958 22 Luleå

Figure 5.29: List of customers with Sort Orders in the Preview

6. Producing Analyses

You can make use of charts, gauges, crosstabs, footer lines in tables or drilldown reports to analyze your data.

6.1 Creating Charts

This object is used to evaluate and display data graphically in diagrams. This gives you an overview of your data and lets you recognize anomalies immediately.

For example, you can analyze sales trends, illustrate percentage shares and show data in multiple dimensions. You have a wide range of different types of diagrams at your disposal:

- Circle/Donut chart
- Bar/Ribbon chart (also displayed as cylinders, pyramids, cones, octahedrons)
  - Simple (e.g. sales per customer)
  - Multi-row (e.g. sales to various customers over the years, scaled by customer)
  - Clustered (e.g. sales to various customers over the years, grouped by year)
  - Stacked (e.g. percentage of sales to various customers stacked over the years)
  - 100% stacked (e.g. respective sales percentages for various customers over the years)
- Line/Symbol: Simple, Multi-row, Stacked, 100% stacked
- Area: Simple, Stacked, 100% Stacked
- Bubbles/Dots: Distributed, Sorted (Displayed as circle, drop or picture file)
- Funnel/Pipeline
- Map/Shapefile

Various LL.ChartObject-fields are available for diagrams. You will find more information about this in the chapter "Overview of Fields".

6.1.1 Inserting a Chart Object

There are various ways of outputting chart objects:

1. A chart as an element in the report container. Add the object via the "Objects" tool window. If you have not yet added a report container to the workspace, select Insert > Report Container (Objects > Insert > Report Container) and pull the object to the right size in the workspace while holding down the left mouse button. A selection dialog will appear for the chosen element type. Choose the "Chart" element type.

2. You can output charts and gauges in a table cell. To do this, select the relevant entry from the menu in the object dialog for the table. If you want to output the aggregated data, a good way of doing this is to use a footer line.

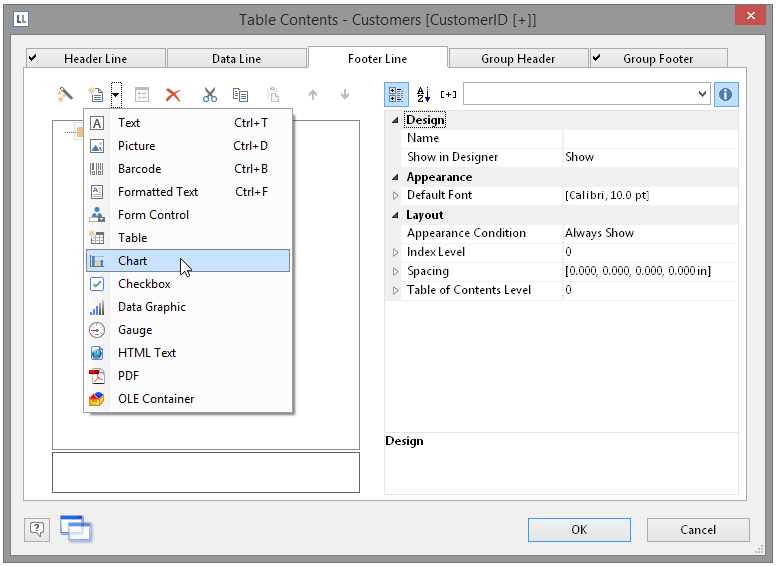


Figure 6.1: Chart object in a footer line

3. In the following dialog, now select the data source. All available tables are shown hierarchically, in other words, under the tables you will find the relational tables in each case.

   To evaluate sales per country, for example, choose the "Customers > Orders > Order Details" table in the Sample Application so that you have all three tables at your disposal. The "Customers" table contains the country, the "Orders" table the order date and the "Order_Details" table the sales.

4. The chart object dialog is displayed. In the drop down lists in the top left you can select the base type and the corresponding sub type.

5. The axes are defined in the tabs (Category Axis, Series Axis, Value Axis, Data Source, Segment, Funnel Segment, Shapefile Selection). You can click directly into the live preview (e.g. onto the title or axis label) to quickly jump to the corresponding property.

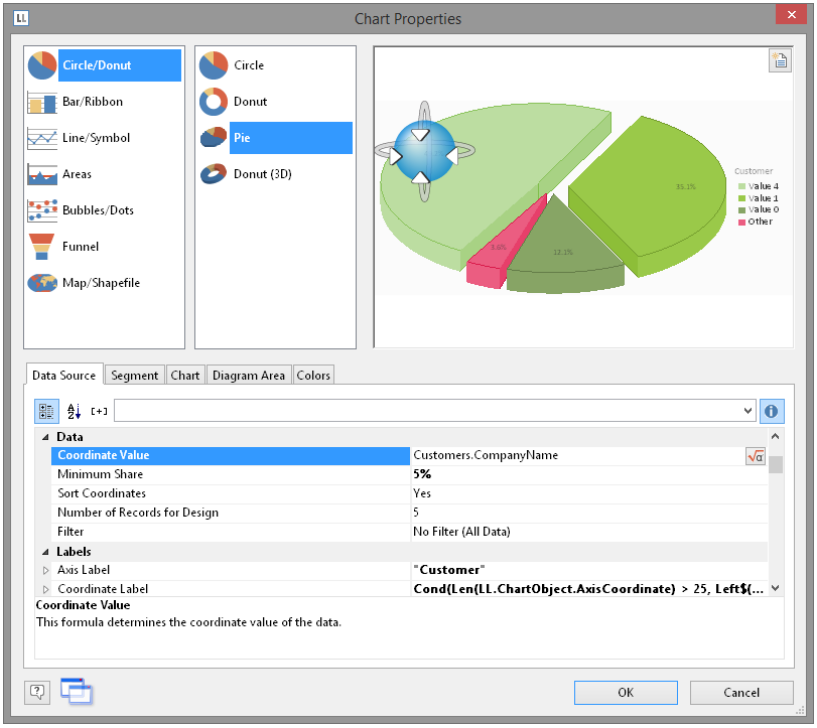


Figure 6.2: Chart object dialog

6. On the "Diagram" tab, select the general diagram options (e.g. perspective, color mode). Also see chapter "Overview of Properties".
7. On the "Object" tab, select the general layout options for the entire chart object (e.g. Title, Background). Also see chapter "Overview of Properties".
8. On the "Colors" tab, you can specify the colors for the display:
   - Design Scheme: Specifies the colors and color sequences for the data rows that are not specified by the "Fixed Colors". You can select a predefined color set from the drop down list. These colors can still be adjusted in the properties.
   - Fixed Colors: You can assign fixed colors to particular axis values. If you click the "New" button, you can create a new assignment e.g. Customers.Country = "Germany".

6.1.2 Pie, Donut or Circle Chart

Let's assume that you want to evaluate the sales per country. The pie chart is the right choice for this. It lets you read off the percentages immediately. Proceed as follows in the Sample Application:

1. As the data source, select the "Customers > Orders > Order_Details" table.
2. For the diagram type, choose Circle/Donut > Pie.
3. You should first specify the coordinate values for the data source, i.e. the values that define the individual segments, e.g. Customers.Country.

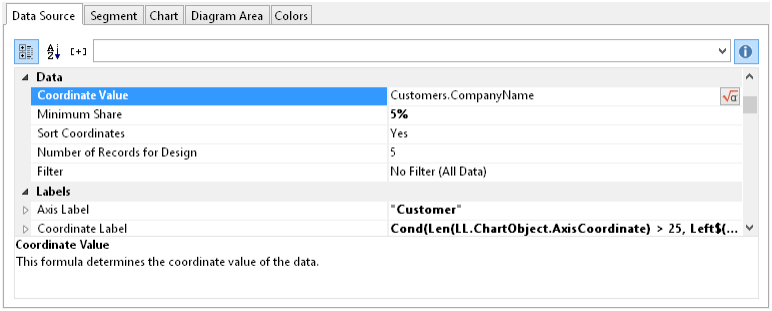


Figure 6.3: Definition of the data source in the object dialog

4. Switch to the "Segment" tab to specify the coordinate values for size of the segment, i.e. the sales. Double-click the "Coordinate Value" property.

   Now select the aggregate function that you want for the contents in the "Coordinate Value" dialog that follows. You want to create a sales evaluation so choose the "Sum" function.

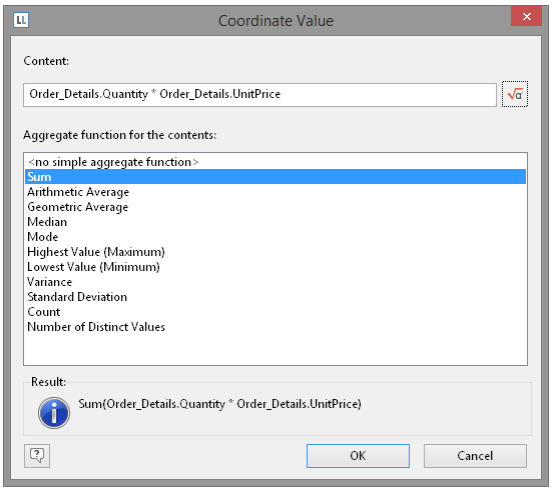


Figure 6.4: Wizard for creating the coordinate value formula

5. In the upper part of the dialog, you can specify the contents by clicking the formula button to start the formula wizard. In the Sample Application, the sales per order value is not supplied directly as a field so you must calculate it using the "Order_Details.Quantity * Order_Details.UnitPrice" formula.

6. The "Label on Object" property is already set to "Yes" so that a label with the percentage value is shown on the segments. Define the value as "percent" without decimal places by means of the "Format" property.

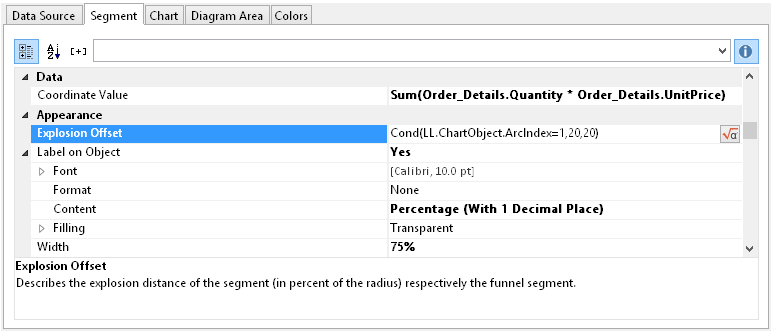


Figure 6.5: Definition of the segment in the pie chart object

7. The "Explosion Offset" property lets you specify a distance to the center for the segment. With the "ArcIndex" chart field, which numbers the segments according to their size, you can even display the largest segment with a greater offset. Example:

   Cond (LL.ChartObject.ArcIndex=1,20,10)

8. On the "Diagram" tab, select the general diagram options. Various properties are available including:
   - The degree of perspective, e.g. strong.
   - The color mode, e.g. single color

   Also see chapter "Overview of Properties".

9. On the "Diagram Area" tab, select the general layout options for the entire chart object. Various properties are available for this including:
   - Title
   - Background including filling, border and shadow, e.g. border = transparent

   Also see chapter "Overview of Properties".

10. On the "Colors" tab, you can specify the colors for the display:
    - Design Scheme: Specifies the colors and color sequences for the data rows that are not specified by the "Fixed Colors". You can select a predefined color set from the drop down list. These colors can still be adjusted in the properties.
    - Fixed Colors: You can assign fixed colors to particular axis values. If you click the "New" button, you can create a new assignment e.g. Customers.Country = "Germany".

11. The pie chart now looks like this:

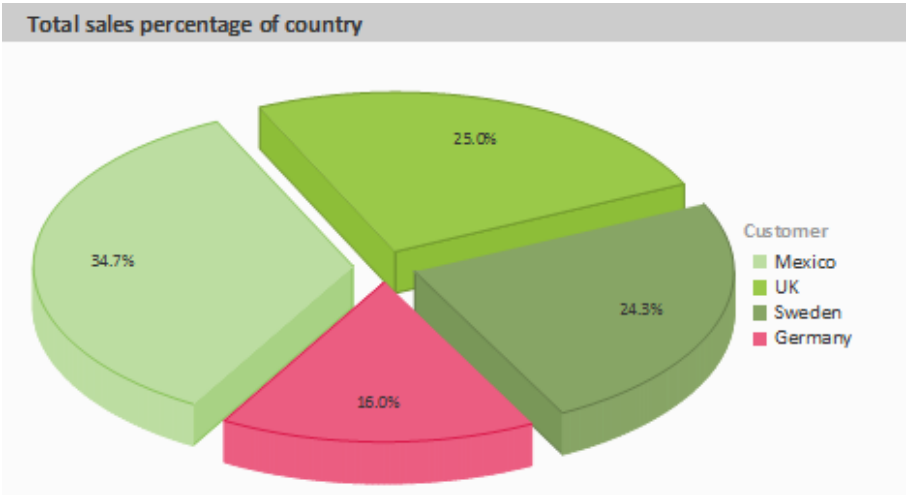


Figure 6.6: Pie chart

6.1.3 Multi-Row Bar Chart

Let's assume that you want to evaluate the sales for various countries over the years, scaled by country. A multi row bar chart is perfect for this. You get a diagram in which you can see the turnover achieved in the respective country for each quarter. Proceed as follows in the Sample Application:

1. As the data source, select the "Customers > Orders > Order_Details" table.
2. Choose Bar/Ribbon > Multi-Row (3D) as the diagram type.
3. First specify the coordinate value for the category axis, i.e. the value of the x-axis. Select the "Customers.Country" field via the formula wizard.

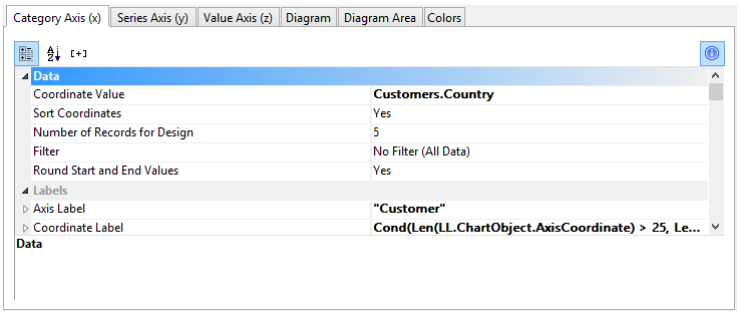


Figure 6.7: Definition of the category axis

4. Now specify the coordinate value for the series axis, i.e. the value of the y-axis. In the Sample Application, the order year is not supplied directly as a field so you must calculate it using the "Year$(Orders.OrderDate)" formula.

If you want to evaluate the data by year, simply enter "Year$(Orders.OrderDate)" as the coordinate value. Type "Year" as the text for the "Axis Label".

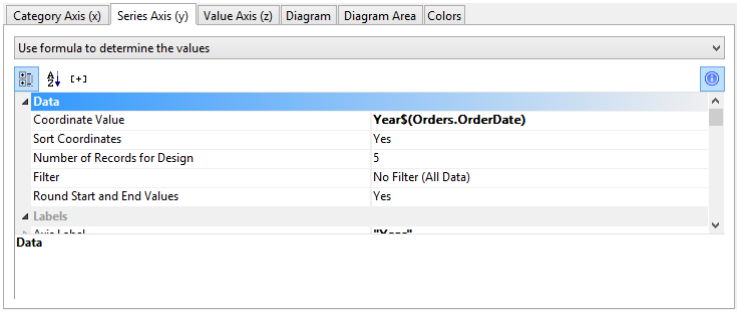


Figure 6.8: Definition of the series axis

5. Now specify the coordinate values for the value axis (z-axis), i.e. the height of the bars representing the turnover. Double-click the "Coordinate Value" property.

   Now select the aggregate function that you want for the contents in the "Coordinate Value" dialog that follows. You want to create a sales evaluation so choose the "Sum" function.

6. In the upper part of the dialog, you can specify the contents by clicking the formula button to invoke the formula wizard. In the Sample Application, the sales per order value is not supplied directly as a field so you must calculate it using the "Order_Details.Quantity * Order_Details.UnitPrice" formula.

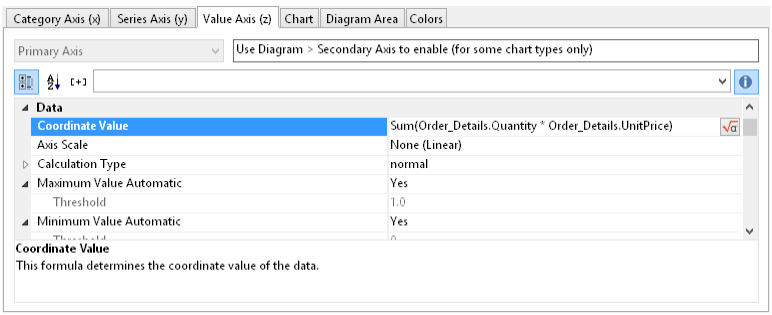


Figure 6.9: Definition of the value axis

7. Various other properties are available on this tab including the following layout options:
   - Maximum Value Automatic: You can limit the height of the displayed area, e.g. to cater for "anomalies".
   - Presentation: The data can be presented in various ways: cylinders, bars, pyramids, ribbons, octahedrons, cones
   - Thickness of the bars
   - Zebra mode for the background

Also see chapter "Overview of Properties".

8. On the "Diagram" tab, select the general diagram options. Various properties are available including:
   - The Projection, e.g. flat.
   - Color Mode: Specifies which axis determines the color, e.g. the y-axis values.

   Also see chapter "Overview of Properties".

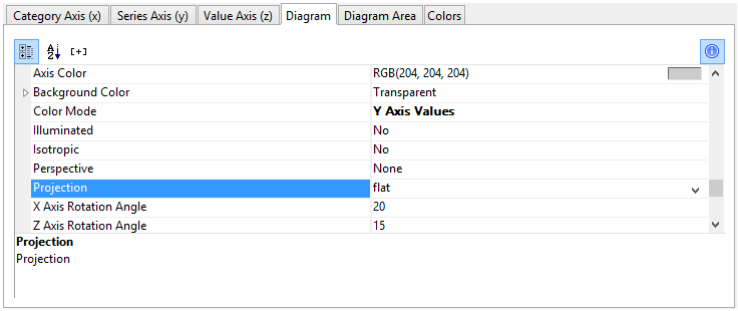


Figure 6.10: Definition of the diagram options

9. On the "Diagram Area" tab, select the general layout options for the entire diagram. Various properties are available for this including:
   - Title
   - Background including filling, border and shadow, e.g. border = transparent

   Also see chapter "Overview of Properties".

10. The multi-row bar chart now looks like this:

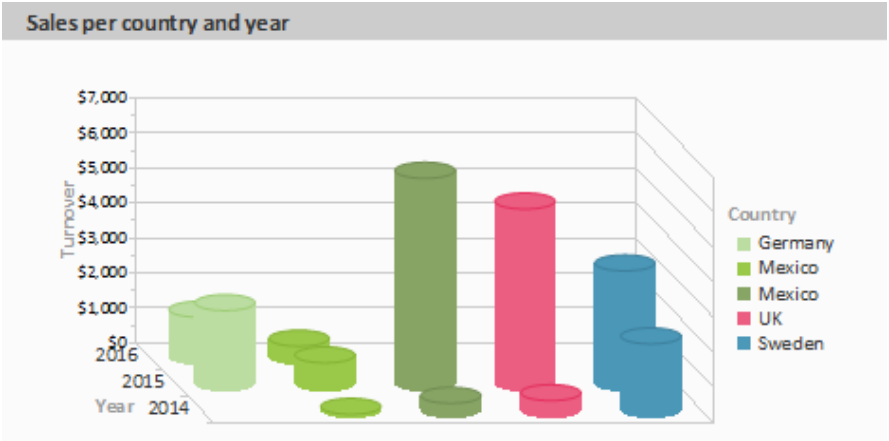


Figure 6.11: Multi row bar chart

6.1.4 100% Stacked Bar Chart

The pie chart in the first example gave you an overview of the percentages for the entire evaluation period. But in order to be able to recognize trends, it would be good to see how the percentages have changed during the course of the evaluation period. The 100% stacked bar chart can be used for precisely these types of applications. The respective percentage of the length of the bars relates directly to the turnover percentage of the respective country.

Proceed as follows in the Sample Application:

1. As the data source, select the "Customers > Orders > Order_Details" table.
2. Choose Bar/Ribbon > 100% stacked as the diagram type.
3. First specify the coordinate values for the category axis, i.e. the values of the x-axis. Select the "Customers.Country" field via the formula wizard.
4. Now specify the coordinate values for the series axis, i.e. the values of the y-axis. In the Sample Application, the order year is not supplied directly as a field so you must calculate it using the "Year$(Orders.OrderDate)" formula.
5. Specify the coordinate values for the value axis (z-axis), i.e. calculate the turnover with "Sum(Order_Details.Quantity * Order_Details.UnitPrice)".
6. On the "Diagram" tab, choose "Left to Right" for the "Alignment" to create a horizontal diagram.
7. The multi-row bar chart now looks like this:

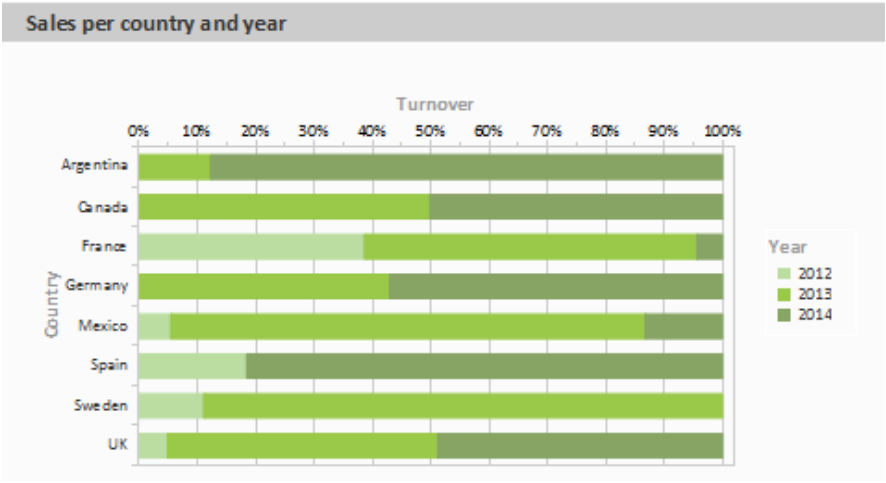


Figure 6.12: 100% Stacked bar chart

6.1.5 Multi-Row Line Chart

A line diagram offers an alternative to a multi-row bar chart. You can read off the values faster here.

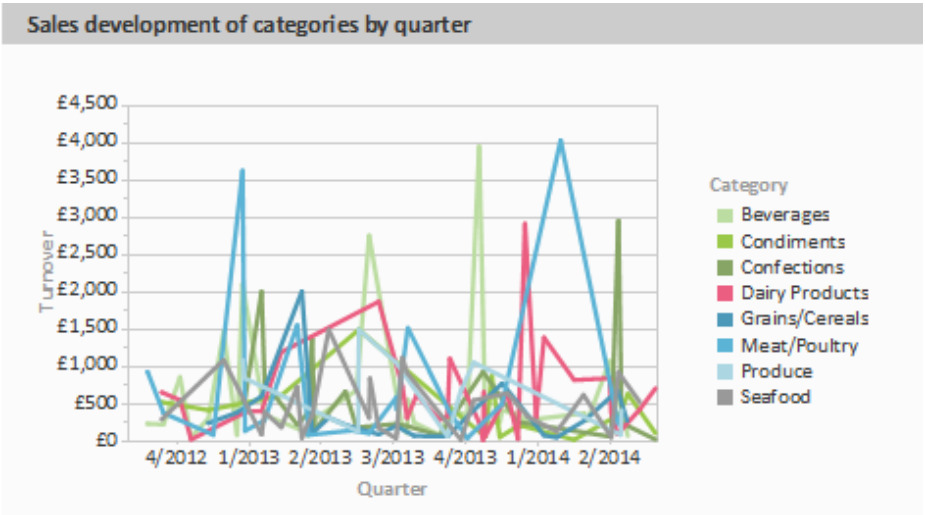


Figure 6.13: Multi-row line chart

Proceed as follows in the Sample Application:

1. As the data source, select the "Customers > Orders > Order_Details" table.
2. Choose Line/Symbol > Multi-Row as the diagram type.
3. First specify the coordinate value for the category axis. Select the "Orders.OrderDate" field via the formula wizard.
4. Select the property "Coordinate Label > Format" and select "%q/%y" in the Date-section (user-defined).
5. Now specify the coordinate value for the series axis. Select the "CategoryName" field via the formula wizard.
6. Specify the coordinate values for the value axis and calculate the turnover with the "Sum(Order_Details.Quantity * Order_Details.UnitPrice)" formula.

6.1.6 Stacked Area Chart

The stacked area chart is available as an alternative to the multi row line chart. This chart allows you to compare statistical relationships more swiftly as the areas between the lines are colored in.

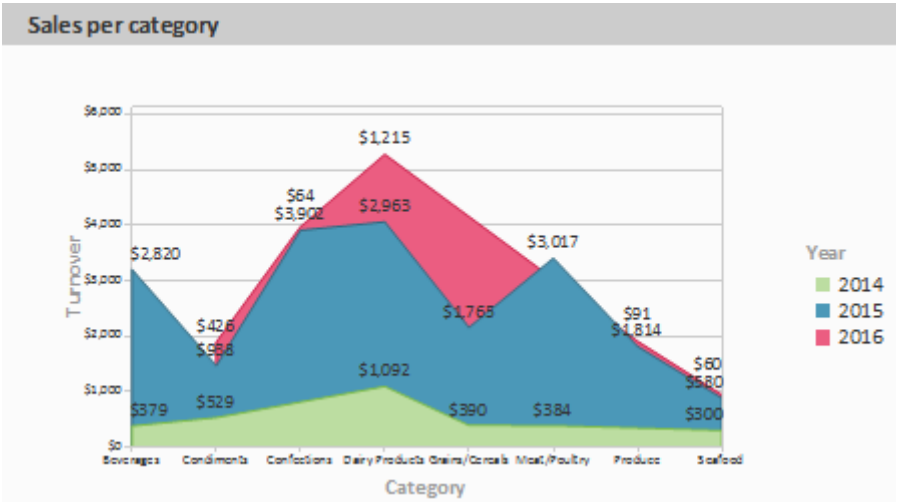


Figure 6.14: Stacked area chart

Proceed as follows in the Sample Application

1. Select the "Customers > Orders > Order Details" table as the data source.
2. Select Area > Stacked as the chart type
3. First specify the coordinate value for the category axis. Select the "CategoryName" field via the formula wizard.
4. Specify the coordinate values for the series axis. In the Sample Application, the order year is not supplied directly as a field, so you must calculate it using the "Year$(Orders.OrderDate)" formula.
5. Specify the coordinate values for the value axis (z-axis), i.e. calculate the turnover with the "Sum(Order_Details.Quantity * Order_Details.UnitPrice)" formula.

6.1.7 Distributed Bubble Chart

Bubble charts allow for a four-dimensional representation of statistics in that, along with the position on the y and x axes, the color and the size can be defined by statistical information. Diverse options are available regarding how you would like the bubbles to be displayed.

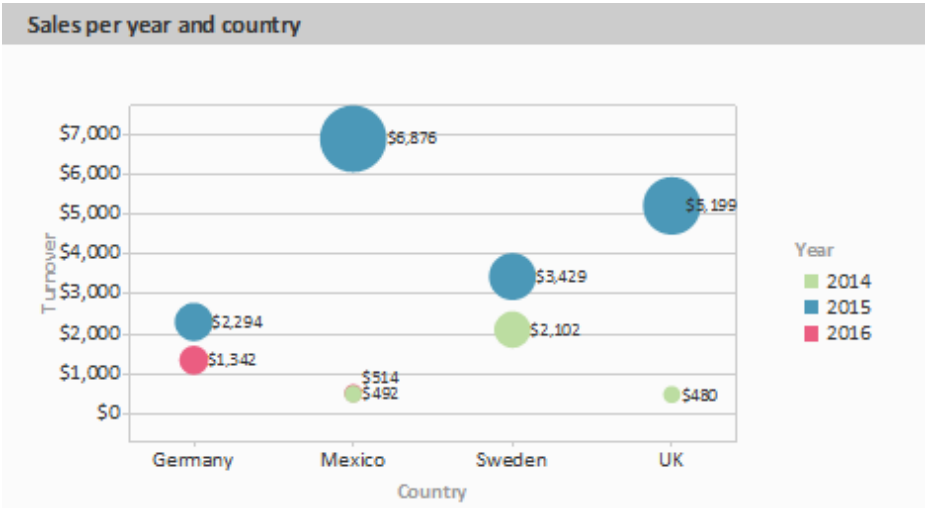


Figure 6.15: Distributed bubble chart

Proceed as follows in the Sample Application

1. Select the "Customers > Orders > Order Details" table as the data source.
2. Select Bubbles/Dots > Distributed as the chart type
3. First specify the coordinate value for the category axis. Select the "Customers.Country" field via the formula wizard.
4. Specify the coordinate values for the series axis. In the Sample Application, the order year is not supplied directly as a field so you must calculate it using the "Year$(Orders.OrderDate" formula.
5. Specify the coordinate value for the value axis and the value for the Bubble Size and calculate for both the turnover with the "Sum(Order_Details.Quantity * Order_Details.UnitPrice)" formula.
6. Under this tab you will also find the options for how you would like the bubbles to appear. Please also refer to the "Overview of Properties" chapter.

6.1.8 Funnel

With a funnel or a pipeline, you can e.g. display your sales processes in the various phases. There are a variety of options for the way the data is presented.

To do so, proceed as follows:

1. Select the appropriate data source.
2. As the diagram type, select Funnel > Vertical Funnel.
3. First of all, define the coordinate value of the data source, i.e. the value that will define the individual funnel segments (the sales phase).

4. Switch to the tab "Funnel Segment" to define the coordinate value for the size of the funnel segment (number of sales opportunities). Double-click on the "Coordinate Value" property. Now, in the subsequent dialog "Coordinate Value", select the desired aggregating function "Count" for the content.
5. For the labeling of the funnel segments with percentage values, the option "Label on Object" has already been set to "Yes". Then, via the property "Format", define the value as "Percentage (Without Decimal Places)" or as "Absolute Value".
6. You can enter an offset for the funnel values via the property "Explosion Offset".
7. In the "Chart" tab, select the general diagram options. The following properties are available (among others):
   - Relative Width of Funnel End/Start.
   - Color Mode, e.g. monochrome
8. In the "Chart" tab, select the general layout options of the entire object. The following properties are available (among others):
   - Title
   - Background incl. filling, border and shadow, e.g. border = transparent
9. In the "Colors" tab, you can configure the color options.

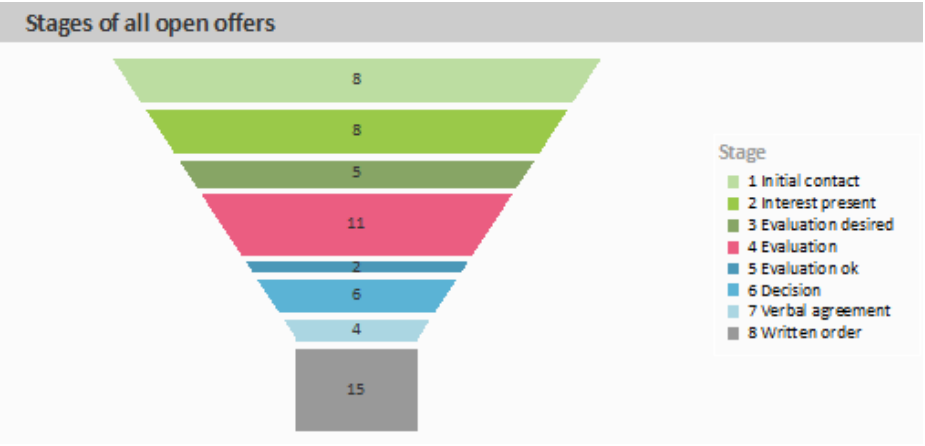


Figure 6.16: Funnel chart

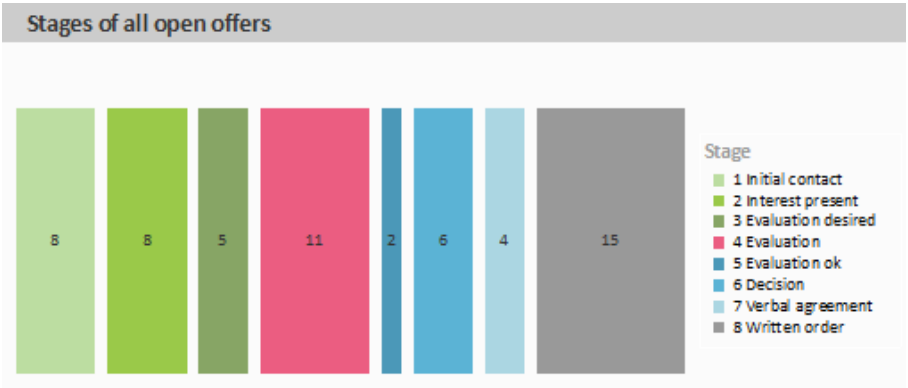


Figure 6.17: Vertical Funnel chart (Pipeline)

6.1.9 Map/Shapefile

Shapefiles enable a diverse range of visualization options via a standardized vector description format. Via corresponding templates, a wide range of maps, seating charts or floor plans can be generated. The Shapefile determines the shape, and an associated attribute database enables the shapes to be referenced to the properties (e.g. country names).

Tip: The availability of this chart depends on the application.

Example: A visualization of the temperature distribution of the earth is to be generated.

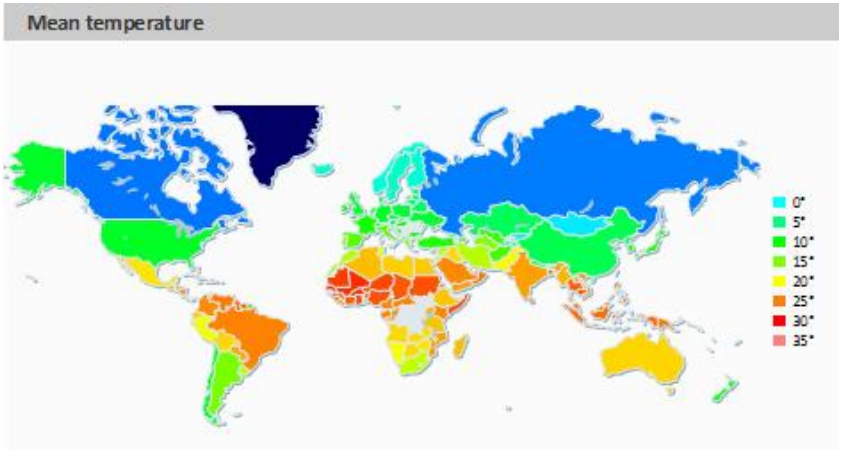


Figure 6.18: Example of a map

To do so, proceed as follows:

1. Select the table "ClimateData" as the data source.
2. As the diagram type, select Map/Shapefile. At this point, a selection dialog appears for the Shapefile templates provided with the software. Select "World With Seas and Lakes".

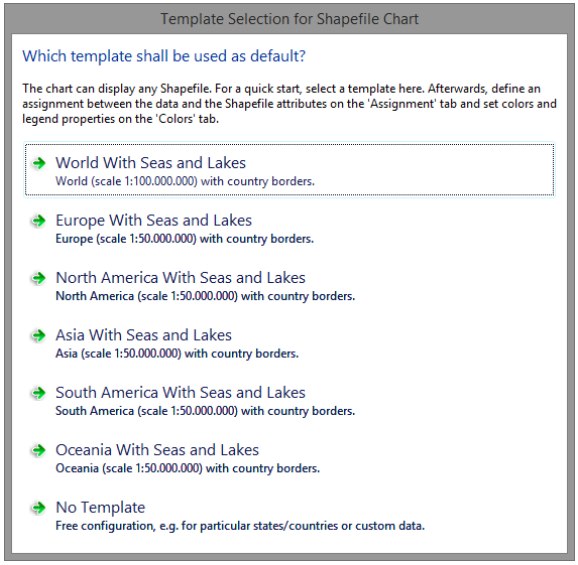


Figure 6.19: Template Selection

3. You will now see the preconfigured data Shapefile in the tab "Shapefile Selection". In addition to the data itself, you can also select foreground and background Shapefiles in order to e.g. display the oceans in the background and the rivers and lakes in the foreground.

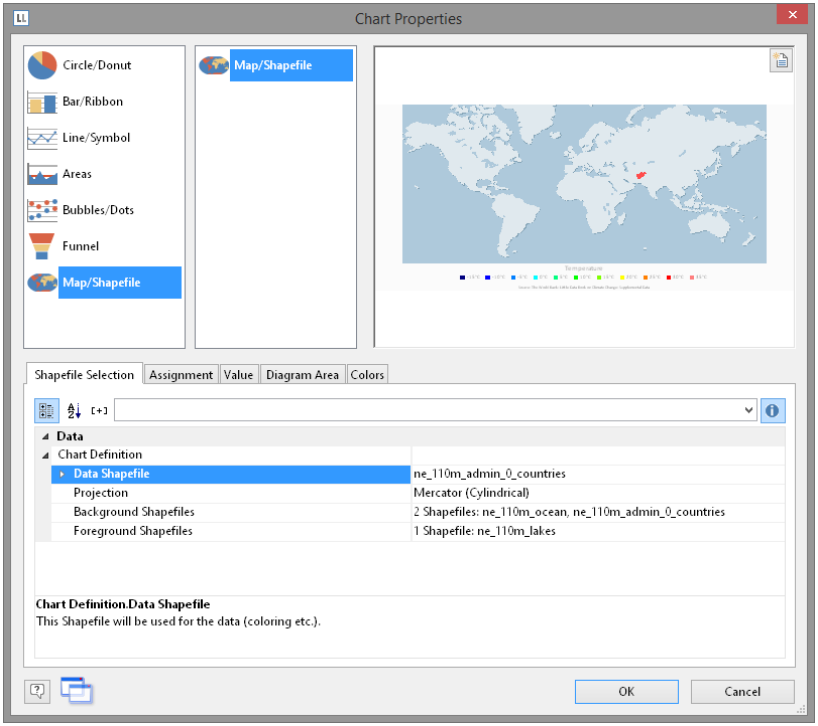


Figure 6.20: Shapefile Selection

4. Click on the "Assignment" tab in order to link the data with the shapes.

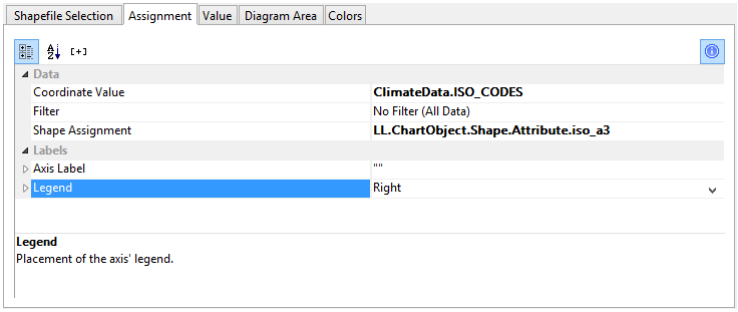


Figure 6.21: Assignment

Link the coordinate value "ISO_CODES" from the data with the attribute "iso_a3" from the Shapefile. By doing this, the data that is related to e.g. "USA" is linked to the outline of "USA"; the temperature from "United States of America" is linked to "United States of America", and so on.

5. Go to the tab "Value" and select the mean temperature as the "Value", i.e. the field "ClimateData.Tmean".
6. Go to the tab "Colors" to define the legend. As the first entry, define the color via the function HeatmapColor(LL.ChartObject.AxisCoordinate,-20,40) and set the condition to "True". The value will then be used for the actual color fill, and you will obtain a continuous fill color.
7. For the other discrete legend values, enter the corresponding functions, e.g. HeatmapColor(5,-20,40) with the legend text "5°" and set their condition to "False". This means that the value will only be used for the legend.

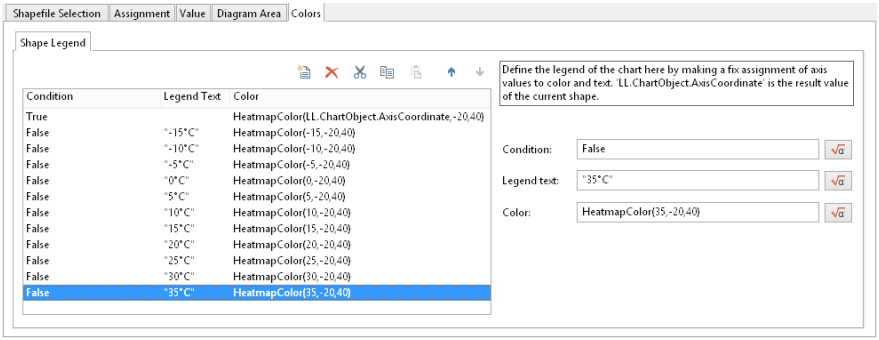


Figure 6.22: Colors and Legend

6.1.10 Using Series to Determine the Values

With three-axis diagrams, you can also determine the values of the series axis (y-axis) by means of rows. This means that you define the different rows (e.g. measured value/target value/actual value) with a single data record and can show them parallel e.g. in a bar chart.

As an example, we will create a diagram which shows the currency percentages of the 3 economic areas. Data for APAC, EMEA and NAFTA is supplied as rows.

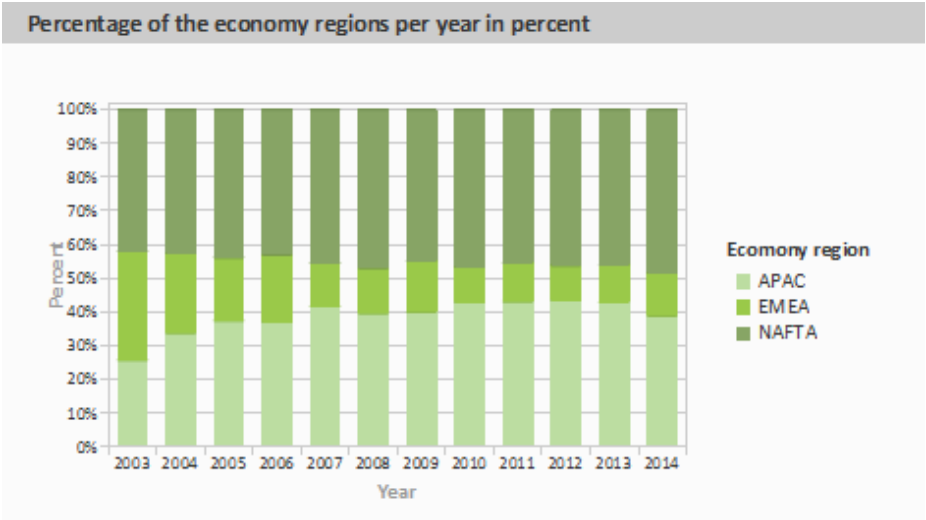


Figure 6.23: Example of a diagram using rows

Proceed as follows in the Sample Application:

1. Select the "Sales" table as the data source.
2. Choose Bar/Ribbon > 100% stacked as the diagram type.
3. First specify the coordinate values for the category axis, i.e. the values of the x-axis. Select the "Sales.Year" field with the formula wizard. Remove the 2 decimal places using the "Str$(Sales.Year,0,0)" formula.
4. Now specify the coordinate values for the series axis, i.e. the values of the y-axis. Select the "Use rows as data source" entry from the drop-down list above the properties.

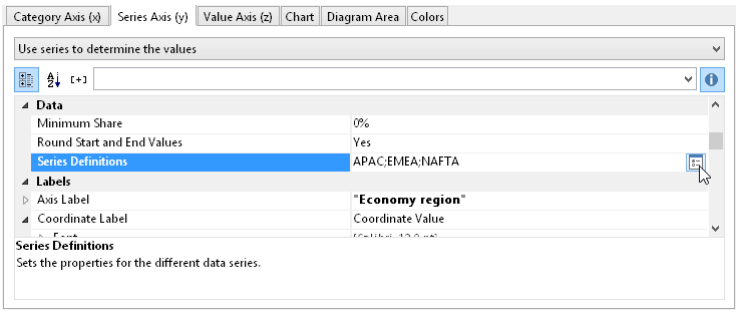


Figure 6.24: Option for using rows to determine the value

This option changes the properties of the series axis and displays a dialog for defining the rows when you click the "Row Definitions" property. Create the

individual rows choosing "Sales.APAC", "Sales.EMEA" or "Sales.NAFTA" in each case as the coordinate value.

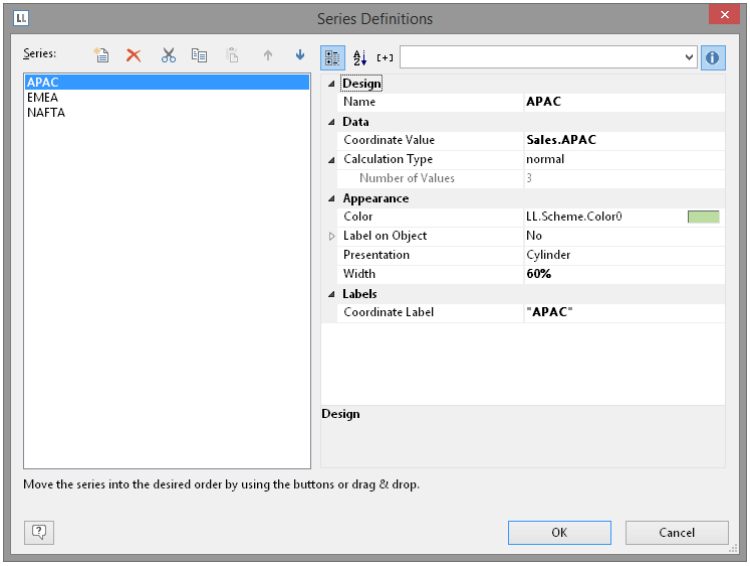


Figure 6.25: Row definitions dialog

6.1.11 Mixing Chart Types

You can mix bar charts with line charts. In addition to the ability to display another data series as a line at the same time as the bar chart, you may also make use of the calculation options such as moving averages and aggregation options. This will allow you to see total turnover, trends in the data, or outliers (both upwards and downwards) at a glance.

Example: Combining a straight line mean with a bar chart (turnover for each country)

1. Select the table "Customers > Orders > Order Details" as the data source.
2. As the diagram type, select Bar/Ribbon > Clustered
3. First, define the coordinate value of the category axis. Use the formula assistant to select the field "Customers.Country".

Now define the coordinate value of the series axis. Use the combo box above the property list to select the entry "Use series to determine the values".

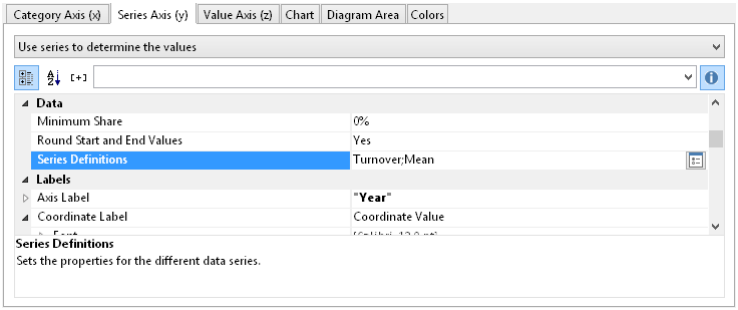


Figure 6.26: Define Series to determine the values

By doing this, the properties of the series axes change and a dialog appears for the property "Series Definitions" for the definition of the series.

4. Define a new series "Single Turnover" and calculate the turnover using the formula "Sum(Order_Details.Quantity * Order_Details.UnitPrice)" with the calculation type "normal" and display type "Cylinder".
5. Define another series named "Mean" and calculate the turnover using the formula "Sum(Order_Details.Quantity * Order_Details.UnitPrice)" with the calculation type "Average" and display type "Line".

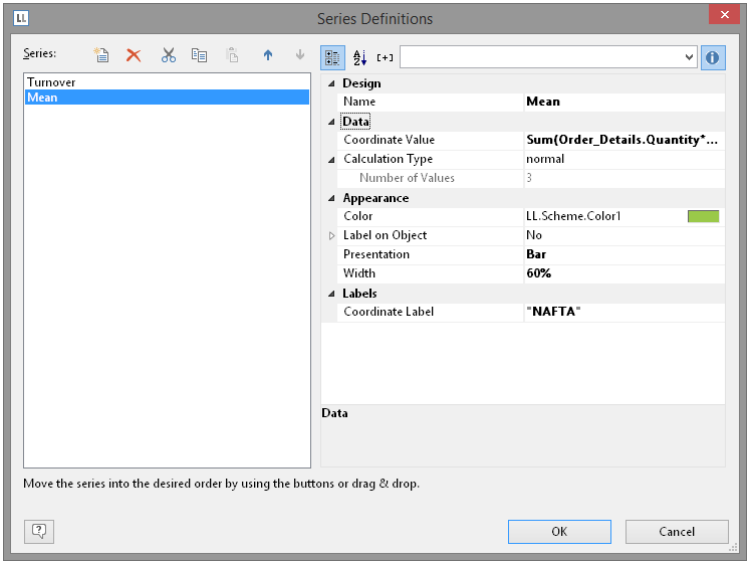


Figure 6.27: Series definitions dialog

6. The result is a turnover analysis with a mean line.

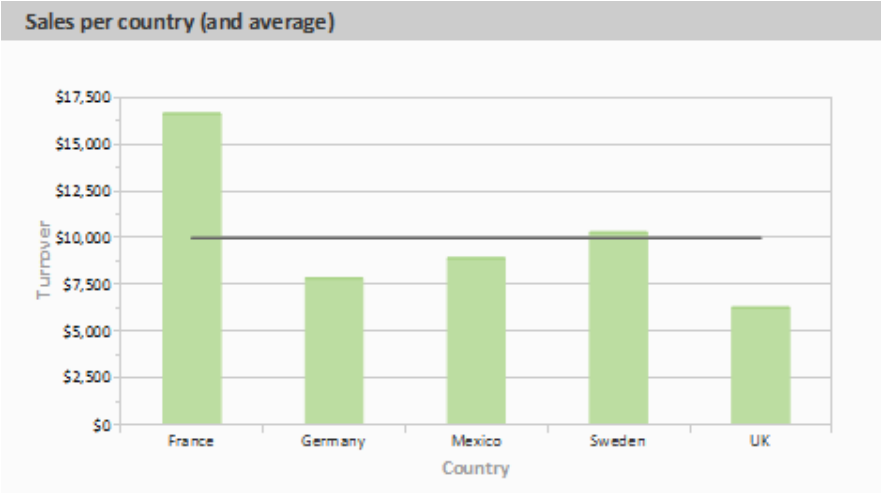


Figure 6.28: Average line

7. When using the calculation type "Line of best fit", a trend line will be displayed:

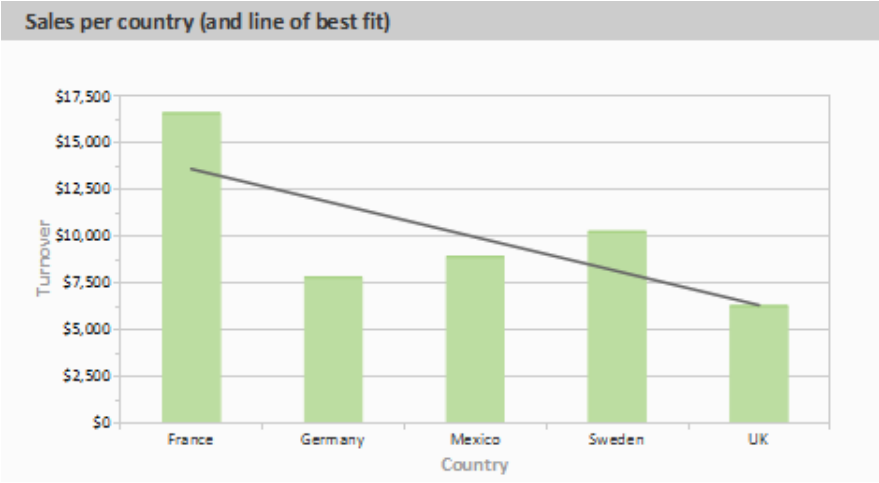


Figure 6.29: Line of best fit

6.2 Creating a Checkbox

Checkboxes are a good way of presenting boolean values. Let's assume you want to visualize the availability of a product or the result of any other condition (true, false), then you can realize that with a checkbox. A selection of several different pictures is available; your own files can be used as well.

2. Order		Order date 11/3/2015	Ship date 11/13/2015	Weight 61.02 kg	Shipper ☑	OrderNo 10,692
Pos	ItemNo	Quantity	Product name			Price in $
1	63	20	Vegie-spread			43.90
			Total			43.90

Figure 6.30: Checkbox object for presenting true/false.

6.2.1 Inserting a Checkbox

There are various ways of outputting checkboxes:

1. A checkbox as an object. Select Insert > Checkbox (Objects > Insert > Checkbox) and pull the object to the right size in the workspace while holding down the left mouse button.
2. You can output Checkboxes in a table cell. To do this, select the "Checkbox" entry from the menu in the tables object dialog. If you want to output aggregated data, use the output in a footer line.

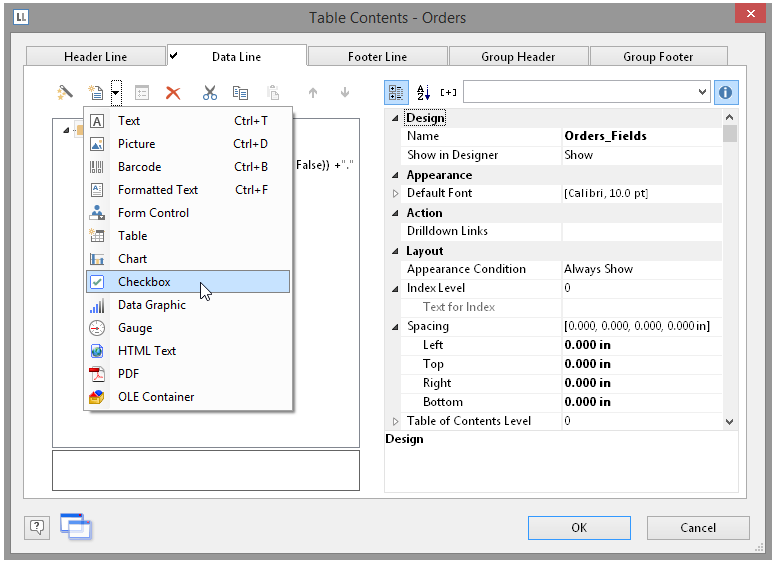


Figure 6.31: Checkbox object in a table cell

6.2.2 Specify Properties

1. In the content property, enter the field or formula that defines the appearance of the checkbox.

2. Select the picture for 'True', i.e. if the calculation of the content formula returns 'true'. Select one of the internal pictures or select an external picture. You can adjust the frame and icon color of the internal pictures.
3. Now select the picture for 'False' and 'NULL'.

Please also refer to the chapter titled "Overview of Properties".

6.3 Creating a Data Graphic

Assuming you have a collated data series detailing the sales figures of your products over the period of a year in the form of a table, you may now want to integrate the associated chart next to it without wasting space. Or you may want to display the customer rating of a product as a symbol. A data graphic can do this for you. These simple charts display entire information series or actual values in a single cell. This allows you to get a quick overview of the development of your data. You can select from bar graphs and symbols (e.g. arrows, stars, traffic lights).

article no	description	review
RNTCOT01	Cottage, South of England with sea view, 4 persons	★★★★★
RNTMTB01	Vespa GT 125/200 I motor scooter for Rome, Paris	★★★☆☆
TRPBARC01	Barcelona city trip: From the Sagrada Familia to Güell Park, excluding flight	★★★★☆
TRPLON01	Extended luxury weekend in London for two	★★★★★

Figure 6.32: Data graphic with symbols

article no	description	review
RNTCOT01	Cottage, South of England with sea view, 4 persons	
RNTMTB01	Vespa GT 125/200 I motor scooter for Rome, Paris	
TRPBARC01	Barcelona city trip: From the Sagrada Familia to Güell Park, excluding flight	
TRPLON01	Extended luxury weekend in London for two	

Figure 6.33: Data graphic with bars

6.3.1 Inserting a Data graphic

There are diverse options for displaying data graphics:

1. A data graphic as an object. Select Insert > Data Graphic (Objects > Insert > Data Graphic) and enlarge it to the desired size in the workspace by holding the left mouse button.
2. A data graphic can be displayed in a table column. For this option, select the "Data Graphic" item in the table object dialog box in the context menu. If you want to represent aggregated data there is the option of displaying the data graphic as a footer line.

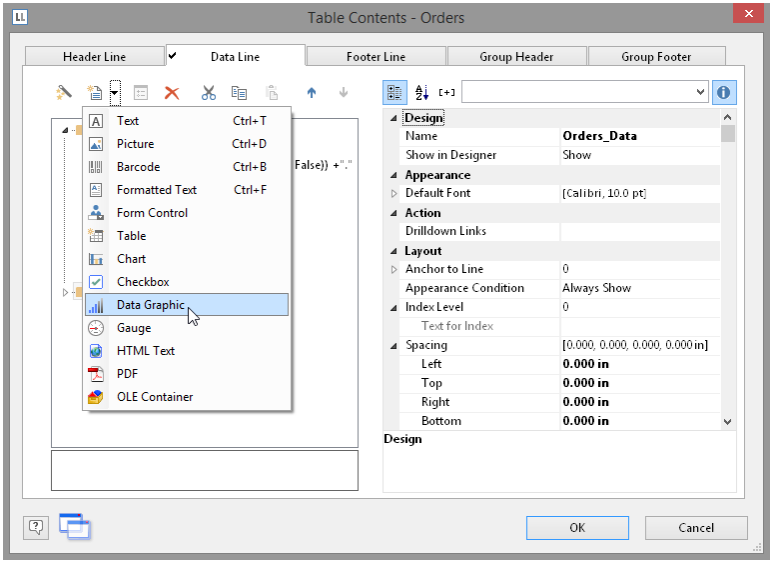


Figure 6.34: Data graphic in a table column

6.3.2 General

Under the "General" tab, you can now specify the value you would like to display in the data graphic. This determines the bar length and the symbol display.

The minimum and maximum value relates to the upper and lower limits of the representation, i.e. the minimal value is 0% in the case of percent scaling and the maximum value is 100% in the case of percent scaling. The scaling is specified in the respective "Sections" setting.

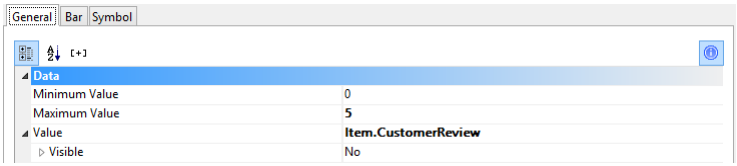


Figure 6.35: Value of the Data Graphic

6.3.3 Define Bar

Under the "Bar" tab you can define a bar graphic. You can choose from options such as:

- Alignment: If you select "originating from the baseline to the left or the right", a base value can be given, on which the display of the bar to the left or the right will depend. The Precalc()- function could be useful here.
- Rounding, Bar Height

- Sections: Define various sections in the start and end value in order to assign colors to the partitions.

  Please also refer to the chapter titled "Overview of Properties".

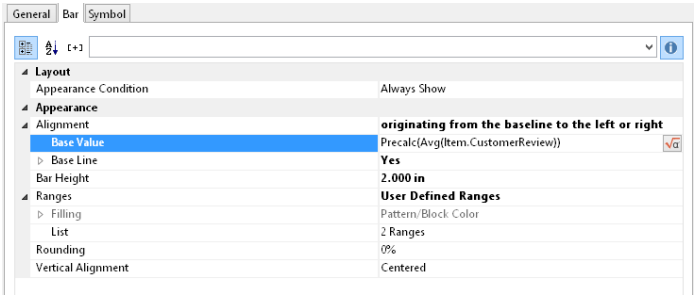


Figure 6.36: Value of the Data Graphic

6.3.4 Define Symbol

You can define symbols under the "Symbol" tab. Various properties are available for this including:

- You can choose from diverse symbol groups such as stars, arrows, traffic lights and bar charts.
- Symbol height
- Sections: You can use the start and end value to define specific areas and assign each group with the symbol that you would like to represent it.
- Please also refer to the Chapter titled "Overview of Properties".

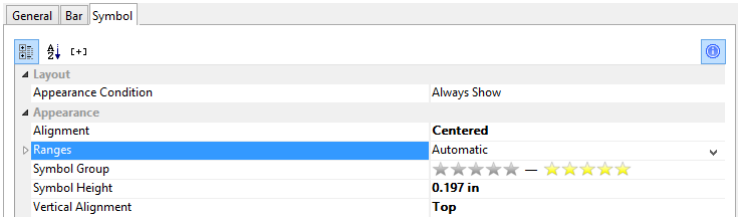


Figure 6.37: Value of the Data Graphic

6.4 Creating Gauges

Gauges are a good way of presenting actual values.

Let's assume that you want to output the current turnover in relation to the target value. A gauge is the right choice for this. It provides you with the value at a glance.

6.4.1 Inserting a Gauge

There are various ways of outputting gauges:

1. A gauge as an object. Select Insert > Gauge (Objects > Insert > Gauge) and pull the object to the right size in the workspace while holding down the left mouse button.
2. You can output gauges in a table cell. To do this, select the "Gauge" entry from the menu in the tables object dialog. If you want to output the aggregated data, use the output in a footer line.

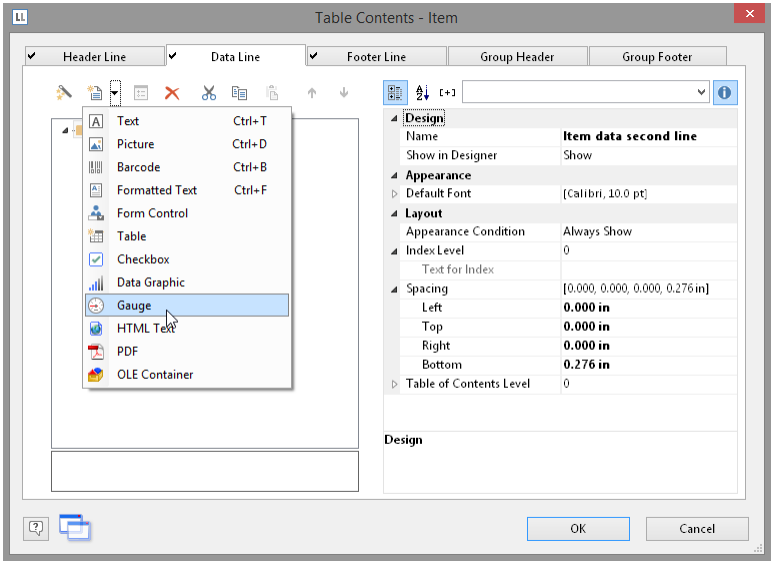


Figure 6.38: Gauge object

6.4.2 Specify Properties

1. Choose the type, form, shadow and pointer properties for the gauge using the drop-down lists.
2. The "Value" property lets you determine the value that the pointer is to display, e.g. the customer's turnover or rating.
3. You can also make use of various other layout options including:
   - Appearance: Filling, pointer options, glass properties.
   - Lettering: Rotation angle, white space before and after the scale range, tickmarks, scale labels, signal ranges, text fields
   - Values: Minimum and maximum vales of the scale

   Also see the chapter "Overview of Properties".

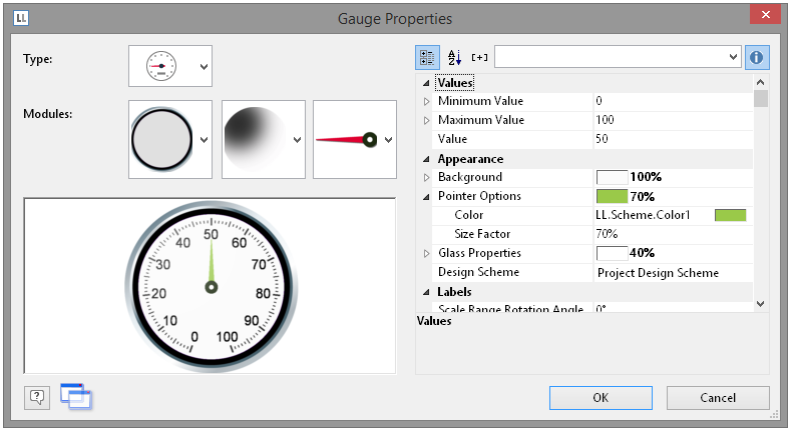


Figure 6.39: Gauge properties

4. Indicate the optimal area, e.g., by specifying the color of the signal range.

Figure 6.40: Gauge with colored signal ranges

To do this, set the "Signal Ranges" property to "Show" and click the "..." button to open the dialog for defining the regions. In this dialog, click the "New" button to create the respective ranges with start and end values and assign the colors that you want.

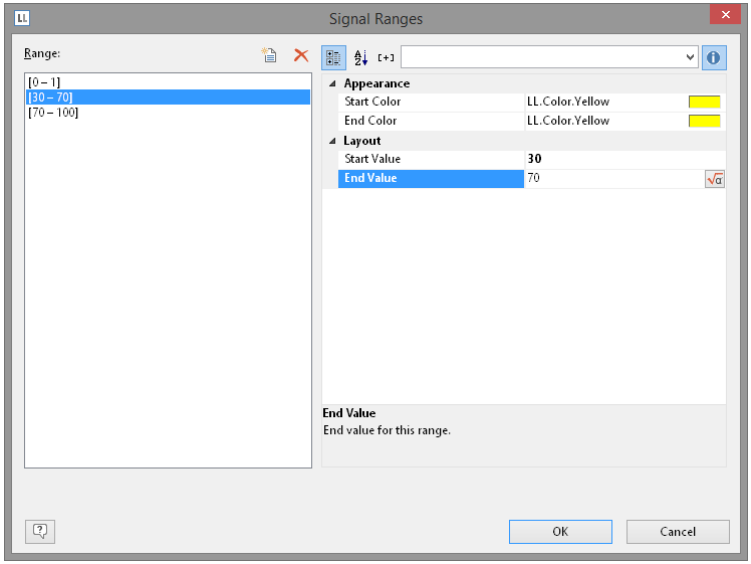


Figure 6.41: Signal range definition dialog

5. You can also define text areas in the same way, i.e. you can output text to any position, as you wish.

Figure 6.42: Gauge with text area

To do this, set the "Labels" property to "Show" and click the "..." button to open the dialog for defining the regions. In this dialog, click the "New" button to create the respective ranges with position, rotation, frame size, background, font and formatting. You specify the position in relation to the area of the gauge (measured from left to right). For example, a vertical and horizontal position of 50% each positions the label precisely in the middle.

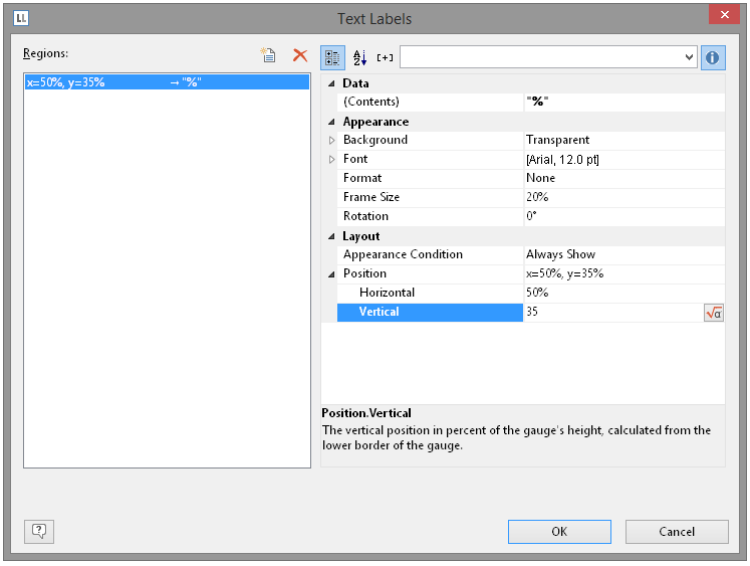


Figure 6.43: Text label definition dialog

6.5 Creating a Crosstab

Crosstabs are used for evaluating and presenting data in multiple dimensions. Crosstabs (or contingency tables) are tables containing information about the frequency of the occurrence of combinations of certain characteristics.

These frequencies are extended by their marginal totals which form "contingencies." With a three-dimensional crosstab, (three characteristics), the table includes an additional column grouping.

For example, you can examine turnover trends per year and region, evaluating sales according to quantities and customers, and create marginal totals for quarters and years.

A normal ("flat") table has the attribute names in the first row and the occurrences of these attributes in all other rows. A crosstab is different. The titles of both columns and rows receive characteristic occurrences and, at the point of intersection of the respective column and row, a value is shown that depends on the characteristics specified for the column and row in each case.

Customer turnover per period									
	2014		2015				2016		Total
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Germany	18,099	17,715	12,358	41,554	19,418	39,198	60,529	35,770	244,641
Mexico	1,370	3,318		9,253	3,400	2,187	2,175	2,370	24,073
Sweden	2,827	2,263	4,127	5,488	5,914	9,513	14,526	14,867	59,524
UK	479	5,986	7,337	9,419	3,871	4,357	10,645	18,522	60,617
Total	22,774	29,282	23,821	65,714	32,603	55,256	87,875	71,529	388,854

Figure 6.44: Example of a three-dimensional crosstab

For the schematic presentation of two-dimensional crosstabs, the 3D multi-row bar chart is the best choice. You can find more information about this in chapter "Creating Charts".

6.5.1 Creating a Crosstab Object

Let's assume that you want to examine the development of turnover per year, quarter and country. Proceed as follows in the Sample Application:

1. Crosstabs are elements in the report container. Therefore, you add these objects in the "Objects" tool window. If you have not yet added a report container to the workspace, select Insert > Report Container (Objects > Insert > Report Container) and pull the object to the right size in the workspace while holding down the left mouse button.
2. A selection dialog will appear for the chosen element type. Choose the "Crosstab" element type.
3. In the following dialog, now select the data source. All available tables are shown hierarchically, in other words, under the tables you will find the related tables in each case.

   For our turnover analysis, e.g. choose the "Customers > Orders > Order Details" table so that you have all three tables at your disposal. The "Customers" table contains the country, the "Orders" table the order date and the "Order Details" table the turnover.
4. A wizard appears which will lead you through the 3 configuration dialogs for crosstabs.

6.5.2 Defining Groupings

In the wizard's first dialog, or alternatively on the "Axis Definition" tab, you first define the grouping for the rows and columns, i.e. the characteristics.

1. In the "Rows" pane, click on the "Insert a row grouping" button.
2. In the formula wizard, you now enter the field or the expression for the row grouping e.g. Customers.Country. You have now created a row grouping and the data will be grouped by this characteristic.
3. In the "Columns" pane, click on the "Insert a column grouping" button.

4. In the formula wizard, you now enter the field or the expression for the column grouping.
5. Since you first want to group the data by year, you must enter an expression here that returns the year of the order date. You have the Year() function in the formula wizard at your disposal; i.e. you select this function from the list and insert the order date as the parameter by double-clicking. The formula looks like this: Year(Orders.OrderDate).
6. Since we also want to examine the data at another level, insert an additional column grouping via the "Insert a column grouping" button.
7. Now enter an expression to return the quarter of the order date. You can use the Quarter() function in the formula wizard for this. The formula then looks like this: Quarter(Orders.OrderDate).

Note: You can change the order of the groupings with the arrow button. The column at the bottom is the inner grouping.

To swap lines and rows (Pivot function) use the button on the lower right on the "Axis Definition" tab. This button is only available in the object dialog, not in the wizard.

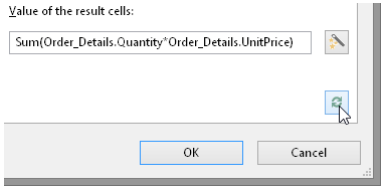


Figure 6.45:Swap all rows and lines

8. You have now created the groupings and you can go on to define the value for the intersection of the respective columns and rows. Click on the "Edit group result formula" button located under "Value of the result cells".
9. Now select the aggregate function that you want for the contents in the "Cell Contents" dialog that appears. You want to create a sales evaluation so choose the "Sum" function. In the upper part of the dialog, you can specify the contents by clicking the formula button to start the formula wizard.
10. In the Sample Application, the sales per order value is not supplied directly as a field so you must calculate it using the "Sum(Order_Details.Quantity * Order_Details.UnitPrice)" formula.

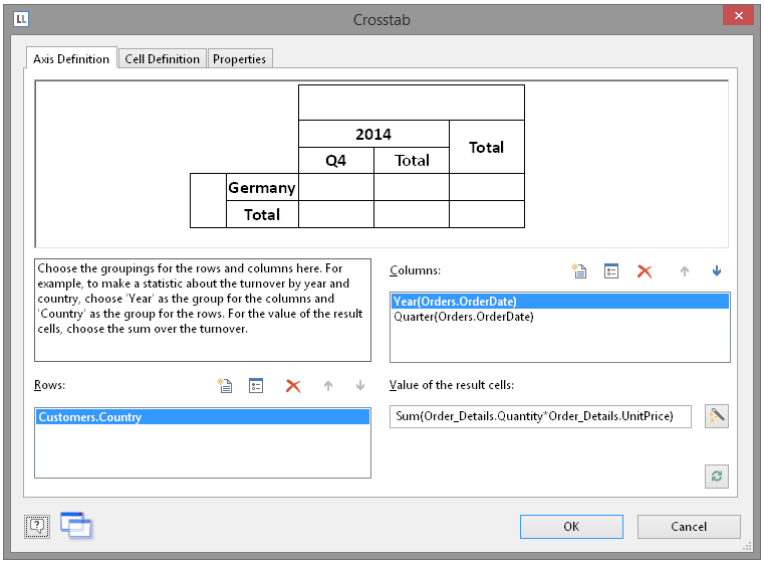


Figure 6.46: Definition of the axes of a three-dimensional crosstab

6.5.3 Defining Cell Properties

In the wizard's second dialog or, alternatively, on the "Cell Definition" tab, you edit the properties of the different cells.

You can select the cells directly in the drawing in the upper pane of the dialog and then edit their properties. To select multiple cells, hold down the CTRL key or you can draw a border around the cells with the mouse.

1. Let's assume that the countries shouldn't be listed alphabetically but descending by turnover. Select the corresponding line header (here: Germany) and select the value "Result Descending" in the property "Sort Order" then. In combination with the property "Limit To" you will get a Top-N analysis by that.
2. Assuming that you want to prefix the number of the quarter with a "Q" as the title of a column. Select the respective column title and then double-click on the "Displayed Contents" property.

   With this property, you can now specify the text that is to be displayed in this cell (independent of the value that you have defined for this column grouping).

   Now define either a suitable formula, e.g. "Q" + Str$(Quarter(Orders.OrderDate)) in the formula wizard
3. Alternatively use the "Format" property. Then remove the "Quarter$()" here, i.e. only the date field remains in the field, and format the value by means of the property.

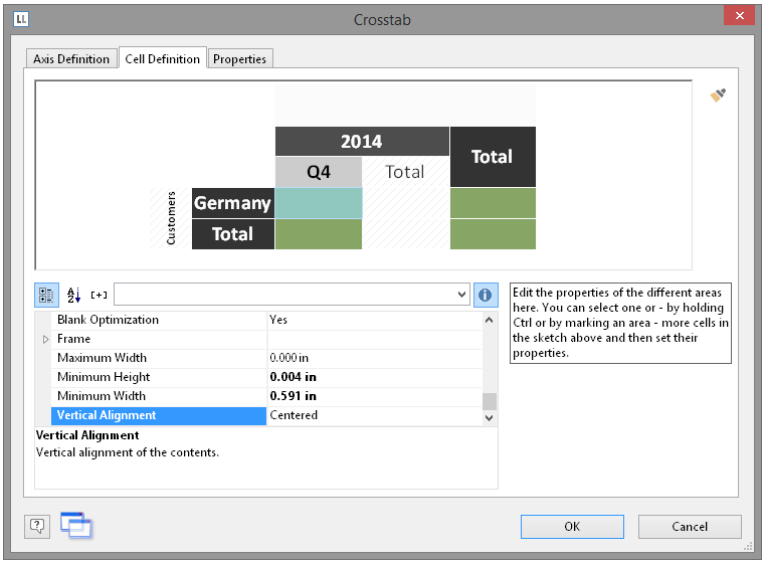


Figure 6.47: Cell definition for the crosstab

To do this, click the "Formatting" property, choose "Date" as the formatting type, and finally select the "User-defined" entry from the drop-down list. At the end of the list you will find an example for formatting a quarter plus the number of the year. Since we don't need the number of the year, shorten the formula's string to "Q%q".

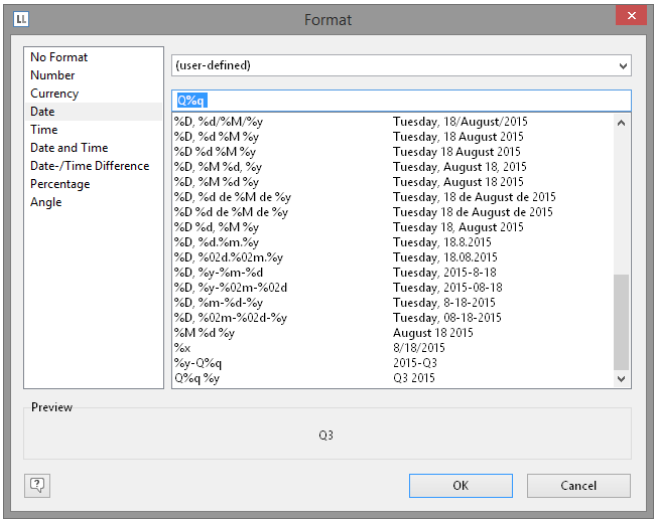


Figure 6.48: Formatting for date values

4. This cell is now formatted and you can go on to format all other cells in the same way. Various properties are available including:
   - Rotation of the content in increments of 90°
   - Background
   - Frame
   - Font
   - Vertical and horizontal alignment
   - Maximum width, minimum width and minimum height

   Also see chapter "Overview of Properties".

6.5.4 The Layout Option and Wrapping Behavior

In the wizard's third dialog or, alternatively, on the "Properties" tab, you edit the layout properties and specify the wrapping behavior.

Various layout properties are available including:

- Background
- Default frame
- Minimum size (%) and minimum height

In addition, as crosstabs are often wider and higher than the specified page format, you can also specify the wrapping behavior for columns and rows. It creates as many pages (shadow pages) as necessary. The row labels are repeated on all pages as standard while the column labels are not repeated.

Various wrapping properties are available including:

- Repeat Labels: Specifies whether the labels of columns or rows are to be printed again in the case of a page break.
- Break Level: Specifies the optimum break level, e.g. "0". This corresponds to the lowest group, i.e. the quarter.
- Column > Page Break on Shadow Pages: If the cross table is too wide, the wrapped parts are printed on shadow pages. A shadow page does not count as a "real" page and therefore does not have a page number. The default setting specifies that the wrapped parts are to be output below the table.

Also see chapter "Overview of Properties".

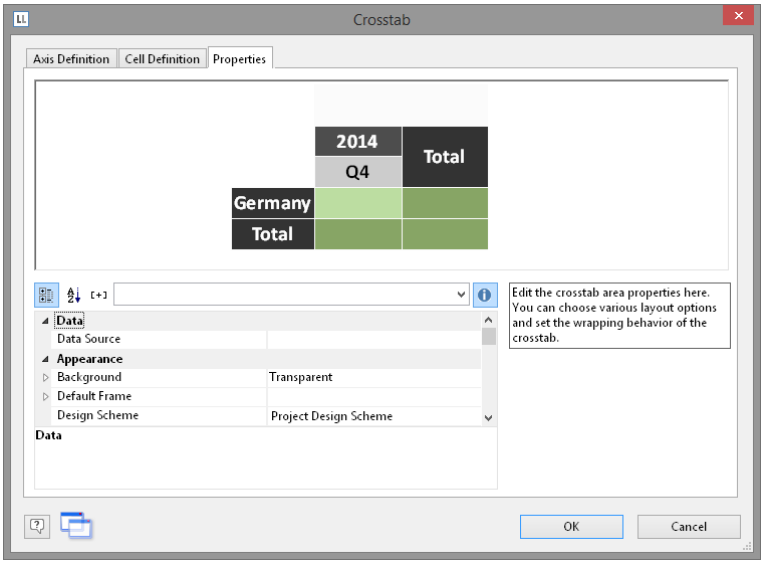


Figure 6.49: Crosstab properties

6.5.5 Special Functions

Various additional functions are available in crosstabs including:

- Crosstab.Value() returns the content of the cell (as a value).
- Crosstab.Cells.Avg() returns the average value of the volume of data.
- Crosstab.Cells.Sum() returns the sum of the cell contents.
- Crosstab.Col$() or Crosstab.Row$() returns the description of the column or the row for the current cell.

  With this, you can, for example, assign a particular color to the background of a column or row. The following example sets the background color to orange for all cells in a row where the cell descriptor is "Germany":

  Cond(Crosstab.Row$()="Germany",LL.Color.Orange,LL.Color.White)

Customer turnover per period

	2014		2015				2016		Total
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Germany	18,099	17,715	12,358	41,554	19,418	39,198	60,529	35,770	244,641
Mexico	1,370	3,318		9,253	3,400	2,187	2,175	2,370	24,073
Sweden	2,827	2,263	4,127	5,488	5,914	9,513	14,526	14,867	59,524
UK	479	5,986	7,337	9,419	3,871	4,357	10,645	18,522	60,617
Total	22,774	29,282	23,821	65,714	32,603	55,256	87,875	71,529	388,854

Figure 6.50: Coloring a particular row

- Crosstab.Cells.Max() or Crosstab.Cells.Min() returns the largest or smallest value in the entire crosstab. With this, you can, for example, emphasize the largest or smallest value of the volume of data or perform calculations. The following example sets the background color of the cell with the largest value to green:

  Cond(Crosstab.Value=Crosstab.Cells.Max(),LL.Color.Green,
  Cond(Crosstab.Row$()="Germany",LL.Color.Orange,LL.Color.White))

Customer turnover per period

	2014		2015				2016		Total
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Germany	18,099	17,715	12,358	41,554	19,418	39,198	60,529	35,770	244,641
Mexico	1,370	3,318		9,253	3,400	2,187	2,175	2,370	24,073
Sweden	2,827	2,263	4,127	5,488	5,914	9,513	14,526	14,867	59,524
UK	479	5,986	7,337	9,419	3,871	4,357	10,645	18,522	60,617
Total	22,774	29,282	23,821	65,714	32,603	55,256	87,875	71,529	388,854

Figure 6.51: Coloring a particular cell

- Crosstab.Col() or Crosstab.Row() returns the index of the column or the row for the current cell. Here, for example, you can set the background color of alternate rows thereby producing a zebra pattern. Example:

  Cond(Odd(Crosstab.Row()),LL.Color.LightGray,LL.Color.White)

Customer turnover per period

	2014		2015				2016		Total
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Germany	18,099	17,715	12,358	41,554	19,418	39,198	60,529	35,770	244,641
Mexico	1,370	3,318		9,253	3,400	2,187	2,175	2,370	24,073
Sweden	2,827	2,263	4,127	5,488	5,914	9,513	14,526	14,867	59,524
UK	479	5,986	7,337	9,419	3,871	4,357	10,645	18,522	60,617
Total	22,774	29,282	23,821	65,714	32,603	55,256	87,875	71,529	388,854

Figure 6.52: Creating a zebra pattern

- Join$() returns a collection of strings, separated by a particular character. For example, you can output the individual turnover amounts in addition to the total turnover. Example:

  Fstr$(Sum(Order_Details.Quantity*Order_Details.UnitPrice),"-##,###,###") + "¶["+ Join$(Fstr$(Sum(Order_Details.Quantity*Order_Details.UnitPrice),"-##,###,###"))+"]"

Customer turnover per period

	2014		2015				2016		Total
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Germany	18,099 (ERROR%)	17,715 (-2%)	12,357 (-30%)	41,554 (+236%)	19,418 (-53%)	39,198 (+102%)	60,529 (+54%)	35,770 (-41%)	244,641
Mexico	1,369 (ERROR%)	3,318 (+142%)	(-100%)	9,253	3,400 (-63%)	2,187 (-36%)	2,174 (-1%)	2,370 (+9%)	24,073
Sweden	2,826 (ERROR%)	2,262 (-20%)	4,127 (+82%)	5,488 (+33%)	5,914 (+8%)	9,513 (+61%)	14,526 (+53%)	14,867 (+2%)	59,524
UK	479 (ERROR%)	5,986 (+1149%)	7,337 (+23%)	9,419 (+28%)	3,871 (-59%)	4,357 (+13%)	10,645 (+144%)	18,522 (+74%)	60,617
Total	22,774	29,282	23,821	65,714	32,603	55,256	87,875	71,529	388,854

Figure 6.53: Display detailed information

- You can use Total() for calculations across all cells. Otherwise, calculations are always made across all values that affect the respective cell.

Also see chapter "Overview of Functions".

6.6 Creating a Gantt Chart

This chart type provides you with a visual representation of activities ("Tasks") in their chronological order on a time axis.

The individual activities are visualized with lines on a horizontal bar. The longer the bar, the longer the period of the activity is. Activities that overlap are depicted with overlapping bars. The bars can be configured flexibly, e.g. with color areas that can be freely defined.

6.6.1 Insert

Let us assume that you would like to represent the increase in pollen release over the period of a year. A colored identification could indicate weak, moderate and strong incidences.

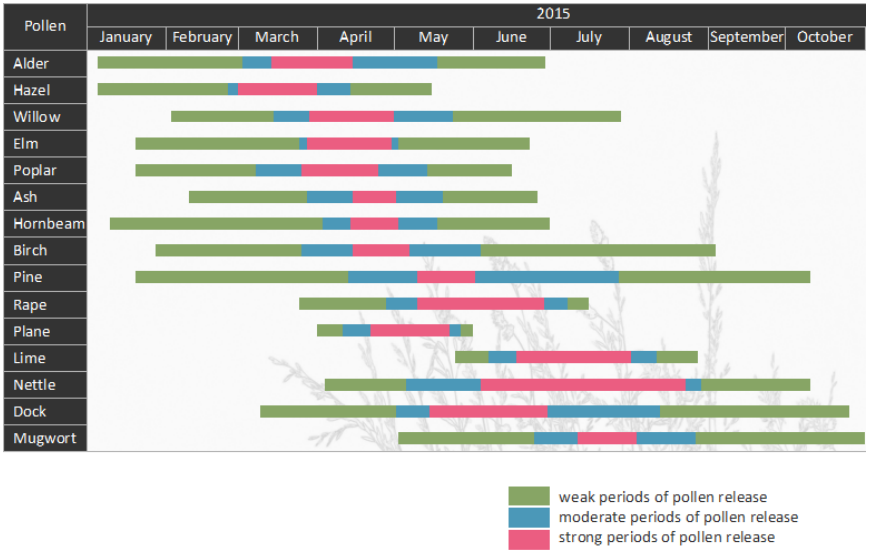


Figure 6.54: Gauge with colored signal areas

Proceed as follows in the Sample Application:

1. The Gantt chart is an element in a report container. Therefore, you need to use the "Objects" tool window to insert this object. If you have not yet added a report container to the workspace, select Insert > Report Container (Objects > Insert > Report Container) and adjust the object to the desired size in the workspace while holding down the left mouse button.
2. A selection dialog will appear for the chosen element type. Select the "Gantt Chart" element type.
3. You can now select the data source in the following dialog. All available tables will be displayed hierarchically. In other words, you will find the related tables under each of the respective table. Select the "Pollen" table.
4. A properties dialog for the Gantt chart will appear.

6.6.2 Properties

In the "Field Assignments" area first select the groupings for the lines and columns, i.e. the tasks and the time axis.

Please note: No aggregate functions or LL.FCount…fields can be used in a Gantt chart.

1. Select the "PollenDescriptionEN" field as the summary task name in the formula wizard. The summary task name defines a superior operation in a project, e.g. main projects and sub-projects. If you do not want to indicate any summary tasks, enter the same value you entered under "Task Name".

Please note: A summary task must always be a real record which can either come from the "Base Table" or from the table that the Gantt chart itself is based on.

2. Please select the "PollenDescriptionEN" field as the task name in the formula wizard. The task name defines the task; in the case of pollen, examples could be alder or hazel.

   Please note: In the case of multiple tasks in a single line (e.g. a holiday plan layout), these records must be separated from one another successively, i.e. the records must be sorted.

3. Please choose the "PeriodBegin" field for the beginning of the task. For summary tasks (i.e. tree-pollen for example), this value is automatically placed at the beginning of the first task.

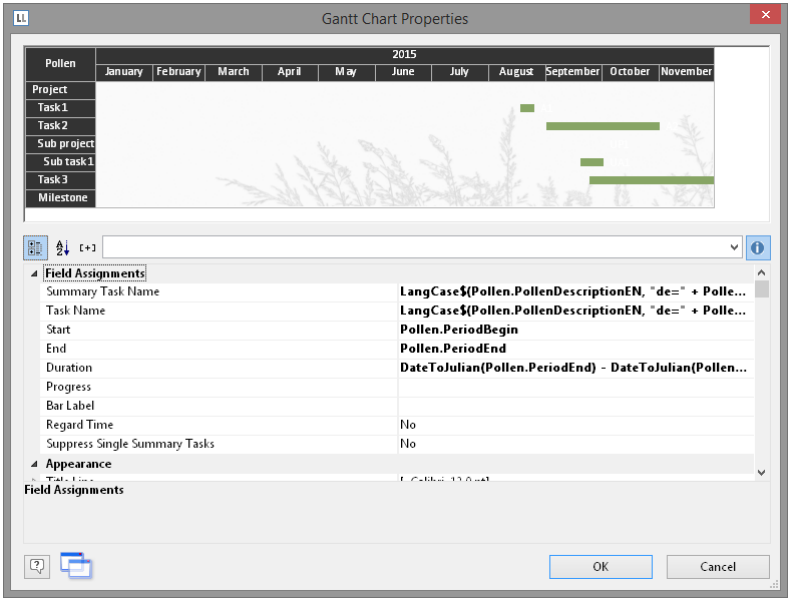


Figure 6.55: Properties of the Gantt chart

4. Select the "PeriodEnd" field for the end of the task. For Summary Tasks (i.e. tree-pollen for example), this value is automatically placed at the end of the last task. The task is interpreted as a milestone, if the end time corresponds with the start time and the duration is 0.
5. Select the duration of a task in days. In our example, the difference of start and end: DateDiff(Pollen.PeriodEnd,Pollen.PeriodBegin). With summary tasks this is calculated with the difference between the days.
6. Select the progress of an action if you would like to indicate this value (e.g. with a project task).

7. Various layout options are available in the "Appearance" area:
   - Define the background and font of the title row, summary task row and task row.

     The color of the bar is defined via the property "Task Rows > Row Properties > Filling (Unfinished) > Color". It is possible to define a formula to fill in areas with different colors, e.g. Cond(Pollen.PeriodType=1,LL.Scheme.Color3 ,Cond(Pollen.PeriodType=2,LL.Scheme.Color8,LL.Color.Red))
   - Under "Table Area" you can specify which additional values should be indicated in the columns. The selection includes an ongoing index, the task name, the start of the task, task duration, end of task and task progress.
   - Define the indicated time period under "Chart Area". For our pollen chart we will select "Months". The superordinate unit of time is "Years". With a project chart the example would be "Days" as time unit with the superordinate unit being "Months".
   - Please also refer to the "Overview of Properties" chapter.
8. Furthermore, you can define the page break behavior for columns and lines, as Gantt charts are often wider than the assigned page format. It creates as many extra pages (shadow pages) as necessary. In this process, the line identifiers are uniformly repeated on all pages, but the column identifiers are not repeated.

   The following break properties are available:
   - Page Break on Shadow Pages: If the Gantt chart becomes too wide, the wrapped parts are printed on shadow pages. A shadow page does not count as a "real" page and therefore does not have a page number. The default setting specifies that the wrapped parts are to be output below the table.
   - Repeat Labels: Specify whether or not the labels of lines should be reprinted in the case of a page break.
   - Break Evenly: Specify whether a page break should run on to the edge of the time interval (e.g. month).

6.7 Creating Statistical Reports With Footers

When you enable the "Data Lines.Suppress" object property in tables, all data lines are completely suppressed. This option is particularly useful in combination with the "Force Sums" option. The latter option specifies that totals are also calculated when a data line is not printed. By combining both options, you can output footer lines with totals and produce interesting statistics in this way.

Let's assume that you want to output the turnover per country:

Land	Turnover
Venezuela	$1,940
France	$88
Canada	$2,234
Finland	$954
France	$145
Total	$5,361

Figure 6.56: Creating statistical reports with footers

Proceed as follows in the Sample Application:

1. Create a new element in the report container and choose "Table" as the object type.
2. In the following dialog, now select the data source. All available tables are shown hierarchically, in other words, under the tables you will find the relational tables in each case.

   To evaluate sales per country, for example, choose the "Orders > Order Details" table so that you have both tables at your disposal. The "Customers" table has a 1:1 relationship with the "Orders" table so you don't need to select it. The turnover is held in the "Order_Details" table.

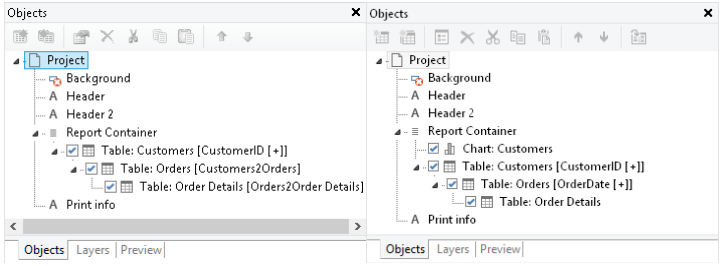


Figure 6.57: Hierarchical tables for statistical reports

3. Create a data line with the "OrderID" field in the "Orders.Order_Details" table. Although the data line is not output (it is suppressed), but it still needs a field so that the table can be printed at all.
4. Define the actual statistic as a footer line, i.e. with the country name in the first column, and total the turnover in the second column. Now calculate the total again with the "Sum(Order_Details.Quantity * Order_Details.UnitPrice)" formula.

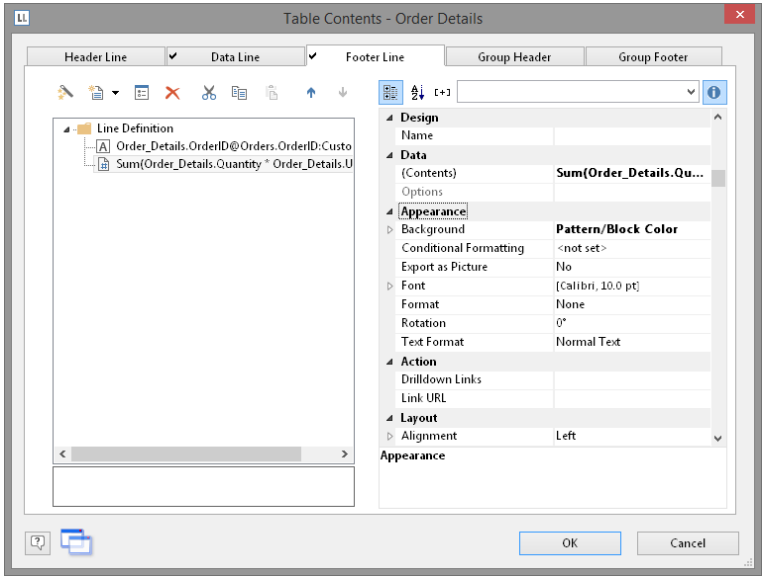


Figure 6.58: Creating footer lines for a statistical report

5. In the "Orders" table, create a data line with the "Country" field from the linked table "Customers". Although the data line is not output (it is suppressed), but it still needs a field so that the table can be printed at all.
6. Define the grand total across all countries as a footer line, i.e. with "Total" in the first column, and total the turnover again in the second column.
7. Now select the "Orders" table in the "Objects" tool window and set the "Data Lines.Suppress" property to "Yes".
8. Finally, also select the "Orders" table and set the "Data Lines.Suppress" property to "Yes" here as well.

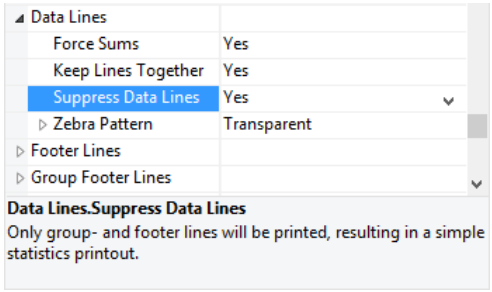


Figure 6.59: Suppressed data lines for statistics

6.8 Drilldown Reports (Increase Detail Level)

Navigation in hierarchical data is known as drilling down. Drilling down makes it possible to "zoom in" to examine the data at different levels of detail. Different print templates are linked to each other to achieve this.

These reports make it possible for anyone to find the information they are looking for quickly, even with very large and complex data.

Only one level is printed to start with (e.g. customers). A new detail report opens (e.g. orders) when you click on a customer.

This drilldown report can be opened in the context menu either in the same window (navigation via the green arrow button in the preview window), or in a new foreground or background tab.

The drilldown function is only available in the preview. You can export any drilldown report to another format from the preview, e.g. PDF.

Drilldown reports linked via relations can be embedded in the preview file to allow them to be sent or saved as a complete unit. You will find the respective option "Embed Drilldown Reports" in the project properties.

A drilldown link in a table relates either to a single field or an entire table row. A drilldown link in a chart relates to a Bar/Segment/Line. A whole series of links can be associated with each of these elements, e.g., to present the data in different ways.

For drilldown links different types are available:

- Link data via relations (only tables)
- Link data by setting report parameters (also charts, crosstab)

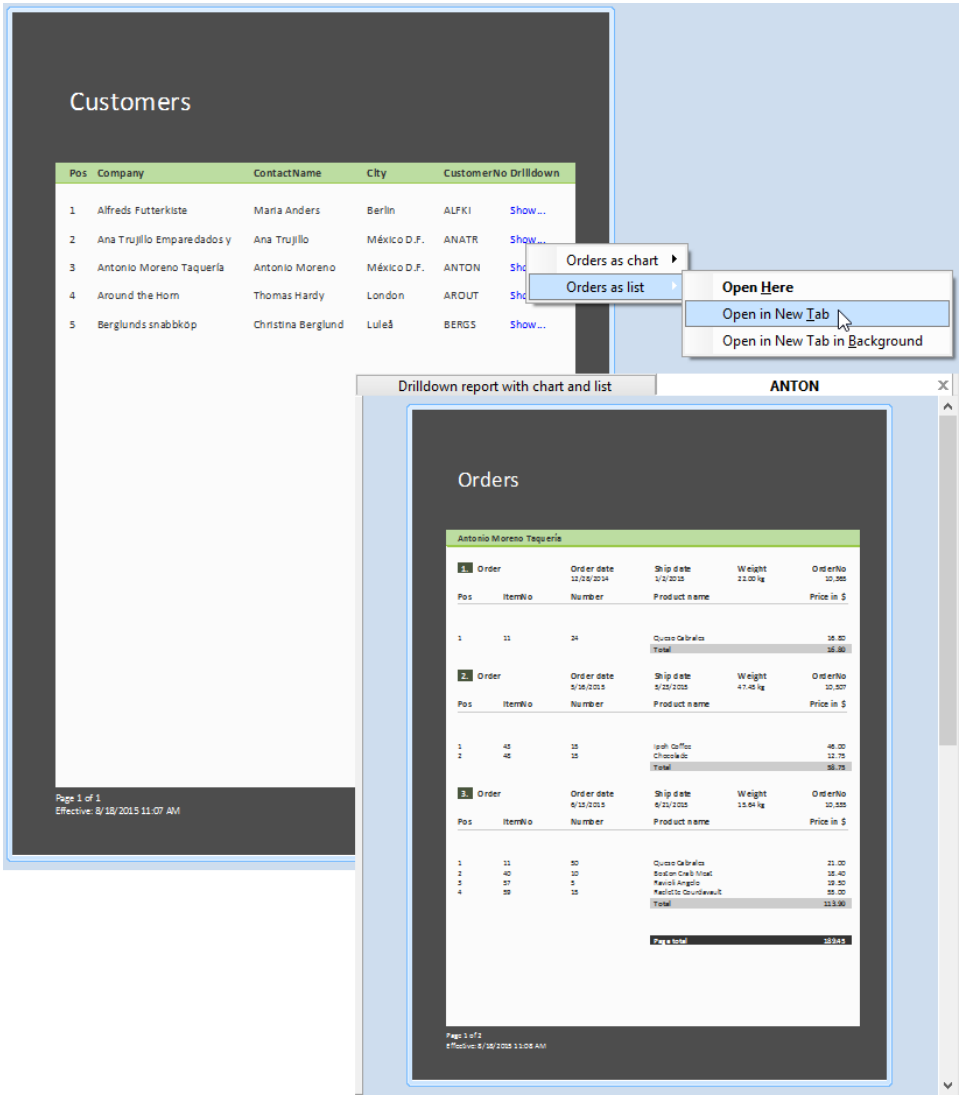


Figure 6.60: Example of a report with an open drilldown report

6.8.1 Drilldown via Relations

This property is only available with hierarchical tables. The link branches in a report that is based on data linked with the data source of the current report container element. Only the child data is available in the Drilldown report.

Proceed as follows to create a drilldown report:

1. Choose Insert > Report Container (Objects > Insert > Report Container). In the workspace, hold down the left mouse button and pull the object to the required size. A selection dialog will appear for the chosen object type. Choose the "Table" object type.
2. In the following dialog, now select the data source. All available tables are shown hierarchically, in other words, under the tables you will find the related tables in each case.

   In order to be able to open a sub-report in drilldown mode, you must select a table here that also has a sub-table! In the Sample Application, select the "Customers" table, for example, as it has "Orders" as a sub-table.
3. Now define the columns of the table with the wizard, i.e. CustomerID, CompanyName, ContactName, City.
4. In the object dialog for the table, now define an additional column for the drilldown link. Enter the text "Show..." as the content.
5. Now open the dialog for creating the drilldown link by means of the "Drilldown Links" column property.

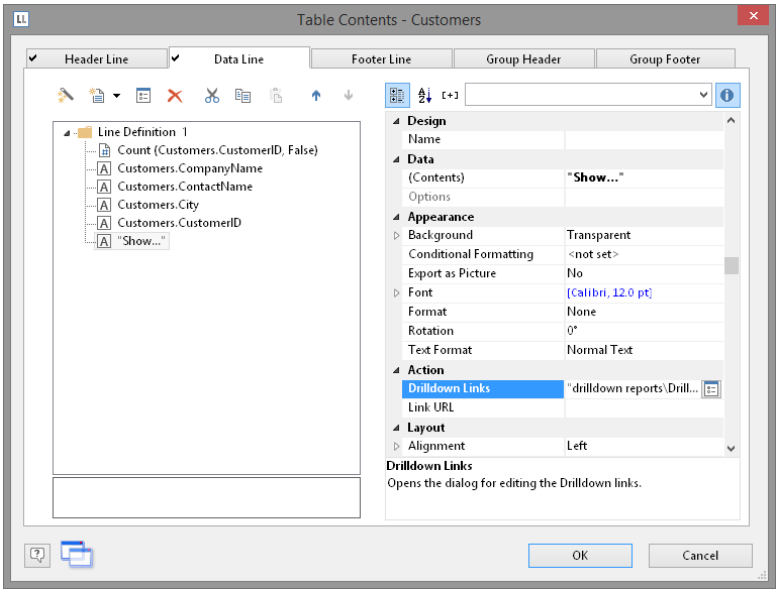


Figure 6.61: Data line with additional column for a drilldown link

6. Create a new drilldown link with the "Insert new link" button in the dialog that appears.

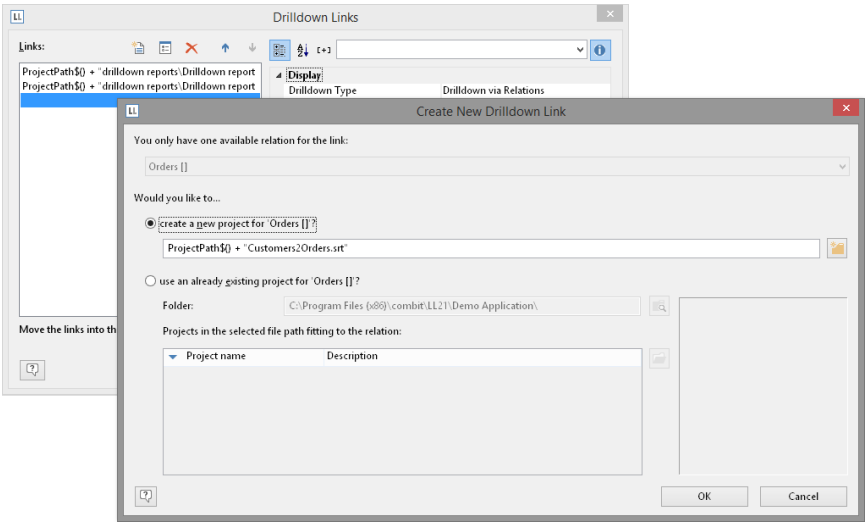


Figure 6.62: Dialogs for defining the linked drilldown report

7. A dialog appears where you can create the print template for the sub-report. Select the "Create a new project" option and enter the name for the print template.
8. A second instance of the Designer opens for you to create the print template. Proceed as usual to create this sub-report. I.e. you create a report container, choose the "Table" object type, choose "Orders" as the data source and define the columns of the orders table that are to be shown in the report.
9. Once you have completed the report, close this second Designer instance.
10. Back in the "Drilldown Links" dialog, you now define the "Menu Text" property for this link. If you have more than one link, its text will be shown in a context menu. If the text is variable (e.g. "Chart for " + Customers.CompanyName) it will also be used as the title for a tab if multiple drilldown reports are shown in a preview window.
11. You have now finished the drilldown report and you can display it in the preview.

6.8.2 Drilldown via Report Parameters

This link type is available for charts, crosstabs and hierarchical tables. The link branches in a report with report parameters. The parameter value has to be provided in the link properties. All data is available in the Drilldown report.

Proceed as follows to create a drilldown report via Report Parameters:

1. Choose Insert > Report Container (Objects > Insert > Report Container). In the workspace, hold down the left mouse button and pull the object to the required size. A selection dialog will appear for the chosen object type. Choose the "Chart" object type.

2. In the following dialog, now select the data source. All available tables are shown hierarchically, in other words, under the tables you will find the related tables in each case.

   In the Sample Application, select the "Categories" table.

3. In the object dialog for the chart, now define a simple bar chart:
   a. Category Axis (x): the 1:1-field "CategoryName"
   b. Value Axis (y): Sum (Order_Details.Quantity * Order_DetailsUnitPrice)
   c. Chart: Alignment Left to Right

4. Now open the dialog for creating the drilldown link via the "Drilldown Links" property (Value Axis Tab).

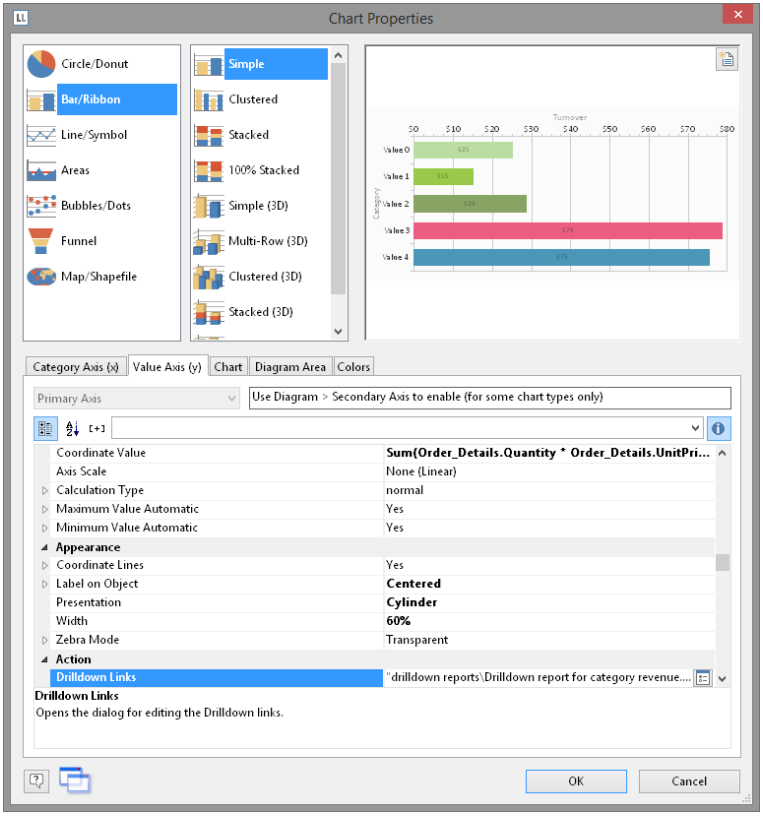


Figure 6.63: Drilldown-Report with Report Parameters

5. Create a new drilldown link with the "Insert new link" button in the dialog that appears. A dialog appears where you can create the print template for the sub-report. Select the "Create a new project" option and enter the name for the print template.

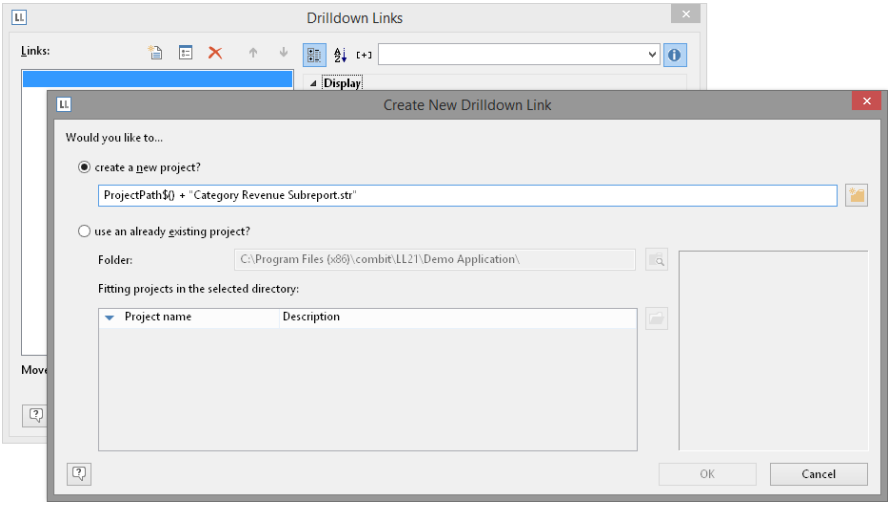


Figure 6.64: Dialogs for defining the linked drilldown report

6. A second instance of the Designer opens for you to create the print template. Proceed as usual to create this sub-report. I.e. you create a report container, choose the "Table" object type, choose "Categories>Products>Order_Details" as the data source and define the columns of the table that are to be shown in the report.

    a. Table Categories: A Footer Line with 2 columns: Text "Total" and a sum column "Sum (Order_Details.Quantity * Order_Details.UnitPrice)".

    b. Table Products: A Group Footer grouped by "Products.ProductName" with 3 columns: Sum (Order_Details.Quantity), 1:1-field ProductName, Sum (Order_Details.Quantity * Order_Details.UnitPrice).

    c. Table Order_Details: A Data Line with any column. In this table, set the property "Suppress Data Lines" to "Yes".

7. Now we create the report parameter to limit the displayed values. Select Project > Report Parameters, click on "Insert a parameter" and name it with a corresponding name, e.g. "Category". All other properties are not relevant for a Drilldown report.

    For more information about Report Parameters see chapter "Report Parameters".

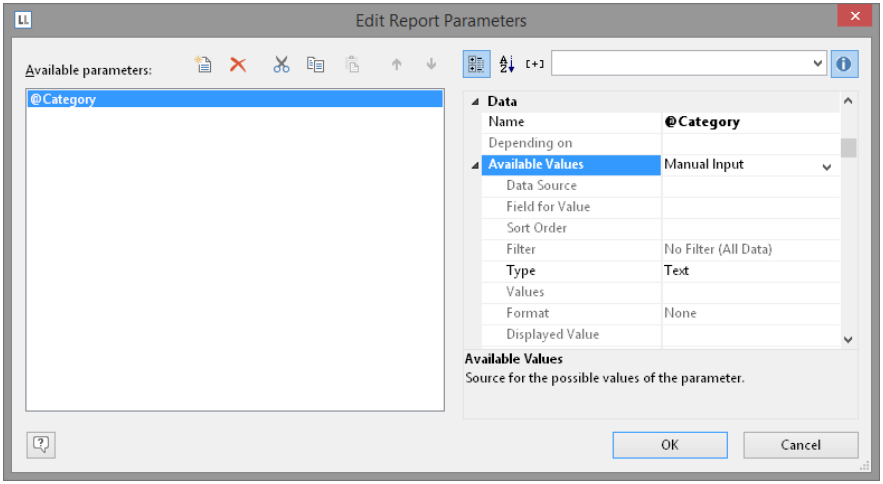


Figure 6.65: Edit Report Parameter

8. Define the corresponding formula for limiting the data in the property "Filter" of the table "Categories". Pay attention to the notes in chapter "Filter".

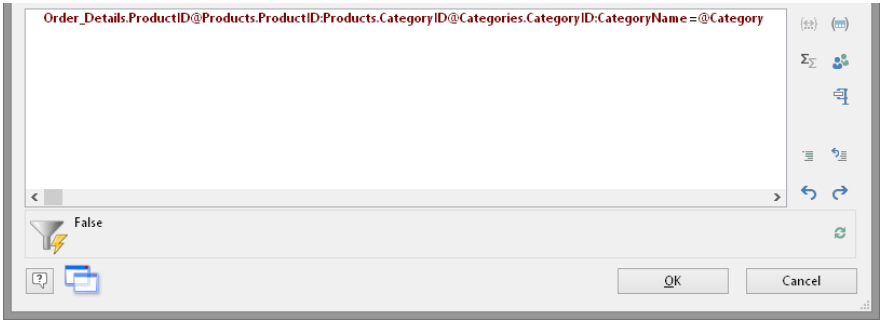


Figure 6.66: Formula for the filter

9. Once you have completed the report, close this second Designer instance.
10. Back in the "Drilldown Links" dialog you now only have to define the report parameter of the project, i.e. we're assigning the corresponding database field "CategoryName" to @Category.
11. In addition you define the "Menu Text" property for this link. If you have more than one link, its text will be shown in a context menu. If the text is variable (e.g. "List for " + CategoryName) it will also be used as the title for a tab if multiple drilldown reports are shown in a preview window.

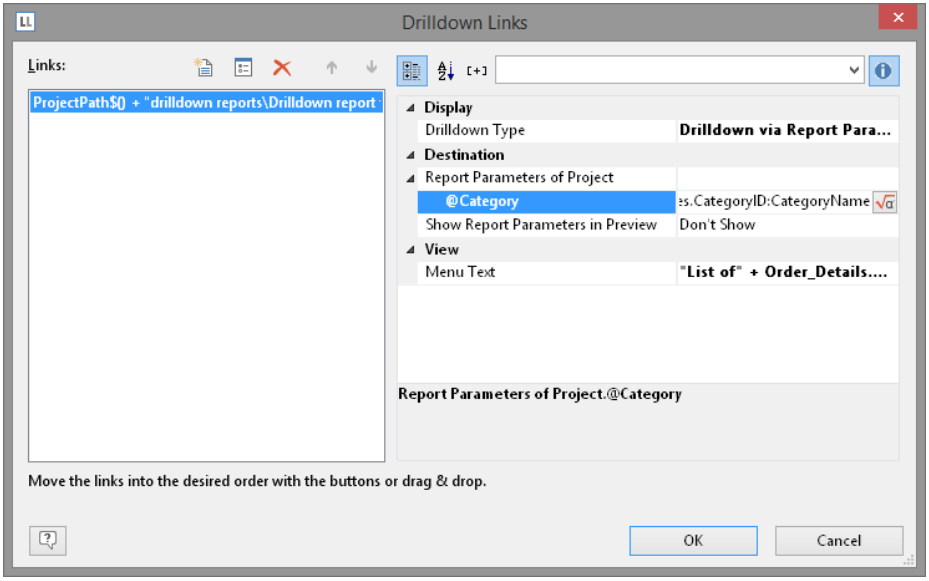


Figure 6.67: Report Parameter

12. You have now finished the drilldown report and you can display it in the preview.

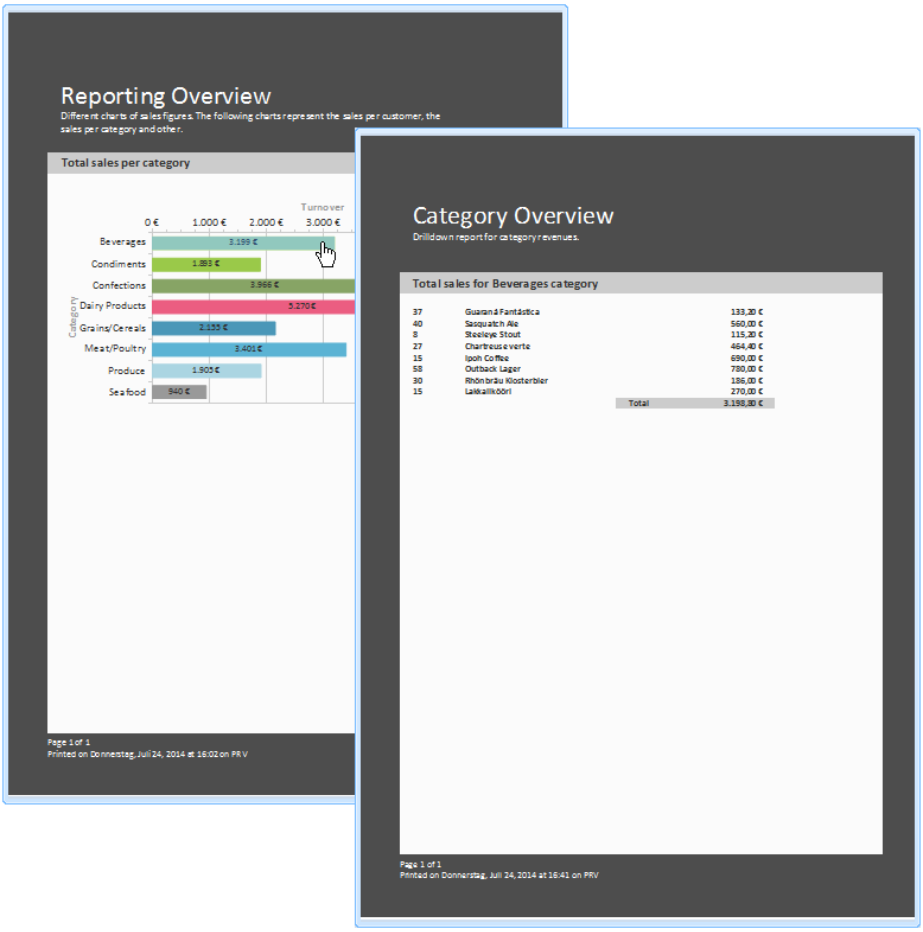


Figure 6.68: Drilldown-Report with Report Parameters

6.9 Multi-Column Reports

With complex projects containing many different diagrams, it may be a good idea to present them over several columns.

To make this possible, the "Column Count" property is provided in the report container and also in tables. You can define up to five columns whereby the report container and the included tables can have different column count values.

Hint: Please also note the hints for using 2 side-by-side report containers in chapter "Multiple Report Container".

Figure 6.69: Multi-column report container

Creation is easy:

1. Select the "Report Container" object in the "Objects" tool window.
2. Set the "Column Count" object property to "2".
3. If you select individual objects, you will then have various properties for controlling column breaks at your disposal:
   - Column Break Before: A column break will be performed before the object is output.
   - Column Break Condition: If the result is "True" when a data line is output in a multi-column table, a column break will be triggered. Tip: the "LL.CurrentTableColumn" field returns the index of the current column.
   - (Page) Break Before: A page break is performed before the object is output. If you have multiple multi-column objects, a page break is triggered automatically after an object if the column counts for the objects are different (e.g. 2-column table followed by a 3-column table) and if there would be insufficient room for the object that follows.

7. Advanced Functions

In this chapter, we will concern ourselves with topics that you will probably only use very rarely. Nevertheless, the possibilities offered by linking objects and by sum and user-defined variables provide you with an important and useful tool for producing sophisticated printed outputs.

7.1 Linking Objects

By interlinking objects, you can influence the order of printing causing some objects to be printed after others thereby overlaying them in the event that they overlap ("sequential (temporal) linking"). Another possibility is to cause the size and position of some objects to be adjusted automatically to correspond to changes to other objects ("spatial linking"). Designer differentiates between three kinds of interlinking:

- Sequential
- Individual size and position adaptation
- At end, keep size

When linking objects, there is a hierarchy: the main object and the attached (interlinked) object.

7.1.1 Object List

The object list defines the implicit print order of the objects, thus they are automatically sequentially interlinked with one another. Unlinked objects are printed first, followed by the tables and finally the objects that are linked in any other way.

There are arrow-buttons in the top toolbar for moving elements and objects up and down.

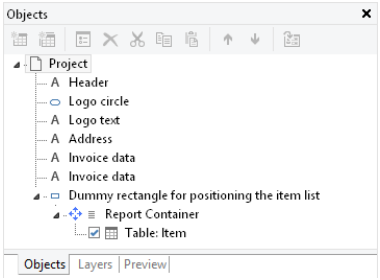


Figure 7.1: Object list in the tool window

Note: Depending on the application, the objects will either be printed in exactly this order (variant 1), or first the non-concatenated objects, then the tables, and finally those which are concatenated with other objects in some way (variant 2). Hence, if an object is to be printed over another object, it must be printed after

this object. A temporal concatenation is therefore only necessary for variant 2, namely when a non-concatenated object is to be printed after the concatenated objects, an object is to be printed over a report container, or content is only known when another object is printed.

7.1.2 Creating Interlinks

You create interlinks or edit existing ones in the "Object List" dialog. This dialog opens up via **Project > Object list** (Object > Object List; NUM* on the number pad) or by double-clicking the "Objects" tool window.

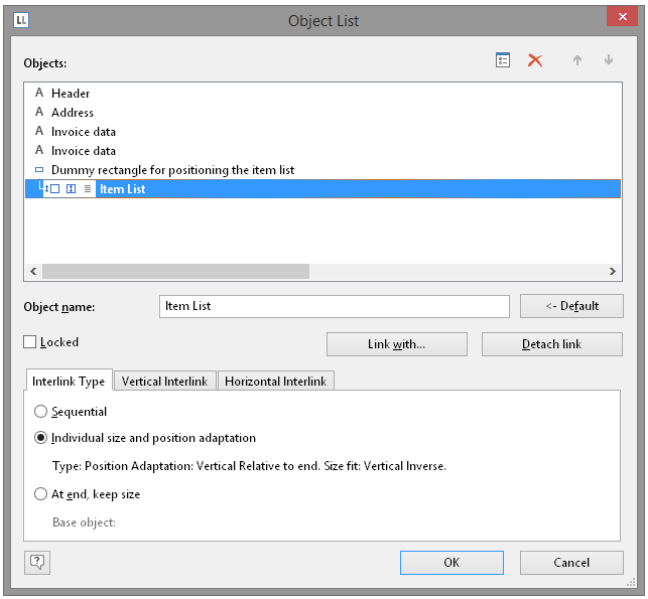


Figure 7.2: Defining interlinks in the object list

You can interlink the selected object with other objects via the "Link with..." button. The link is shown in the object list in the form of a tree structure in which you can see the defined interlinks. You can also interlink several objects with one object.

To change the order of the linked objects use "Arrange" in the object list context menu or the ribbon's "Forward" and "Back" buttons.

When you select the interlinked object, you can choose from the three different kinds of interlink in the lower part of the dialog.

The "Detach link" button lets you remove an existing interlink. The interlinked object will then be shown in the object list as an independent object.

7.1.3 Sequential Interlinking

Sequential, or temporal interlinking makes sense if the content of the interlinked object can only be filled once the main object has been printed or if an object is to be printed *over* another object.

Note: Depending on the application, the objects will either be printed according to the order in the object list (variant 1), or first the non-concatenated objects, then the tables, and finally those which are concatenated with other objects in some way (variant 2). A temporal concatenation is therefore only necessary for variant 2, namely, when a non-concatenated object is to be printed after the concatenated objects, an object is to be printed over a report container, or content is only known when another object is printed.

Example 1: You are printing an article list and want to output the number range of the articles on this page.

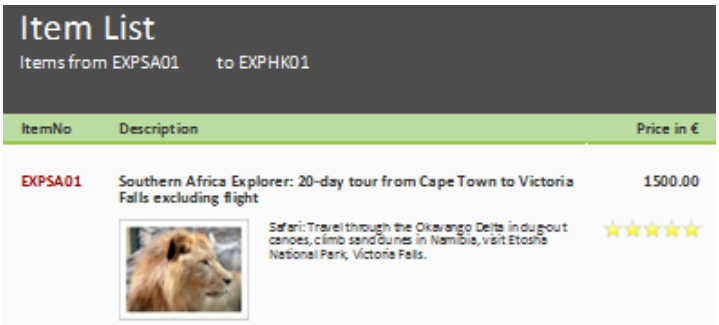


Figure 7.3: Range of article numbers at the top of the list

But the "Article To" object only knows the last article number on the page once the table has been printed. Therefore, the "Article To" text object must be interlinked sequentially with the "Article List" table.

Select the "Article To" object in the object dialog and interlink it with the "Article List" table. The "Sequential" interlink type is already selected.

You must also interlink the table with the "Article From" object. Sequential interlinking is sufficient here as you don't want to change the size or position of the object.

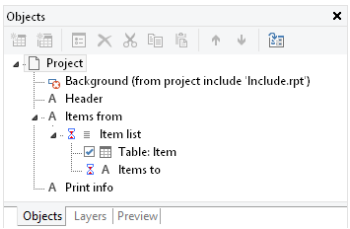


Figure 7.4: Object list with sequential interlinking

Example 2: You want to output "Copy" over a table.

You therefore create a text object containing "Copy". Because objects that are not interlinked are printed first and tables are printed last, the text object must be linked sequentially with the table. Otherwise it would be printed *before* the table and therefore *under* the object.

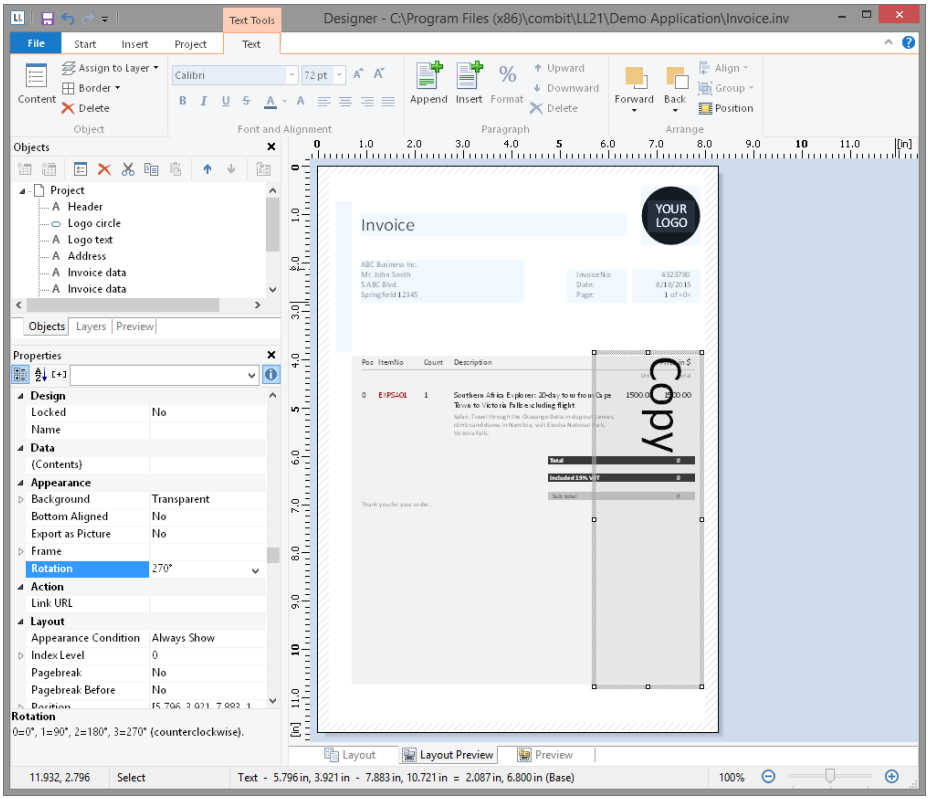


Figure 7.5: Text object over the list

Select the text object in the object dialog and interlink it with the "Article List" table. The "Sequential" interlink type is already selected.

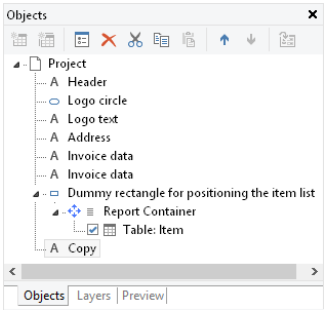


Figure 7.6: Object list with sequential interlinking

7.1.4 The Individual Size and Position Adaptations

Individual size and position adaptations are spatial interlinks, i.e. the size and position of the main object determines the size and position of the linked object. This automatically causes sequential interlinking as well.

If the size or position of the main object changes because the variables that it contains take up less room as the object provides, the linked objects adjust their size automatically to these changes.

Two kinds of interlinking are therefore available:

- Position adaptation: If the *position* of a main object changes, the position of the linked object changes too. You have three options here:
  - Relative to begin: The interlinked object moves in relation to the upper left corner of the parent object.
  - Relative to end: The interlinked object moves in relation to the lower right corner of the parent object.
  - To end: The upper edge of the interlinked object starts at the end of the main object, irrespective of its original position. This causes an implicit size change on the first page on which the child object is printed.
- Size adaptation: If the *size* of a main object changes, the position of the linked object changes too. You have two options here:
  - Proportional: The size of the linked object changes exactly like that of the parent object. E.g. if the main object becomes 10 mm shorter, the interlinked object will also become 10 mm shorter.
  - Inverse: The size of the interlinked object is adjusted inversely to the size of the main object. E.g. if the main object becomes 10 mm shorter, the interlinked object will become 10 mm longer.

You can specify whether the interlinking is to be horizontal and/or vertical in each case:

- Vertical interlinking: The linked object adjusts its position or size to changes in the vertical position or height of the main object.
- Horizontal interlinking: The linked object adjusts its position or size to changes in the horizontal position or width of the main object.

Example of vertical, relative to end position adjustment: You print an invoice and want to output a closing text after the table.

You therefore create a text object and position it below the table.

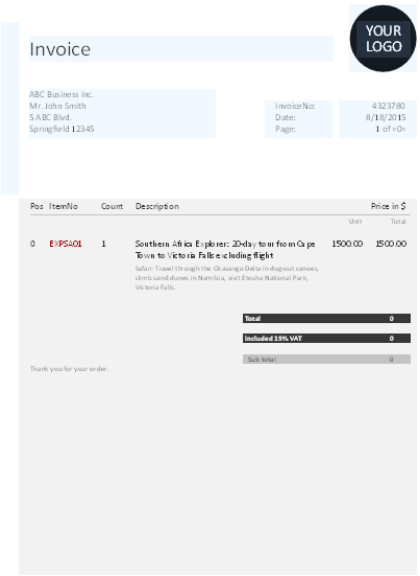


Figure 7.7: Text object below the list

Select the text object in the object dialog and interlink it with the table. Choose "Individual size and position adaptation" as the type of interlink. On the "Vertical Interlink" tab, enable the "Vertical" check box for the position adaptation and choose the "Relative to end" option so that the interlinked text object adjusts its size depending on the position of the lower right corner of the table.

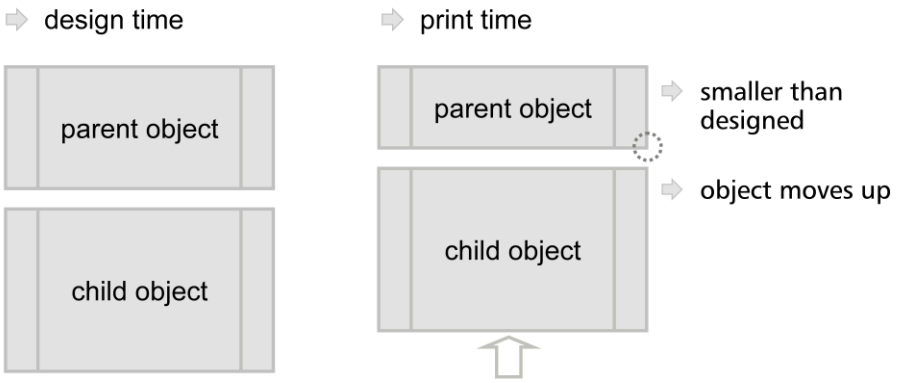


Figure 7.8: Diagram of vertical, relative to end position adjustment

If the table becomes smaller, the text object moves upwards proportionally. It doesn't matter where the table ends, the text object will always be output after the table in the specified size.

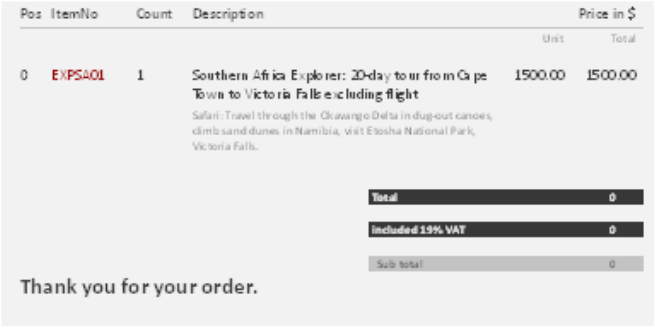


Figure 7.9: Closing text below the list

Example of vertical, relative to end position adjustment and vertical inverse size adjustment: On a multi-page invoice, the item table is to start on the first page below the address. On following pages it is to start at the upper page margin.

1. Create an invisible frame by inserting a rectangular object.
2. The upper edge of the object is positioned precisely where the invoice table is to begin on the following pages. The lower edge is positioned precisely where the invoice table is to begin on the first page.
3. Assign the "Page()=1" appearance condition to the rectangle so that it is only printed on the first page.
4. Create a table. This begins directly below the rectangular object.

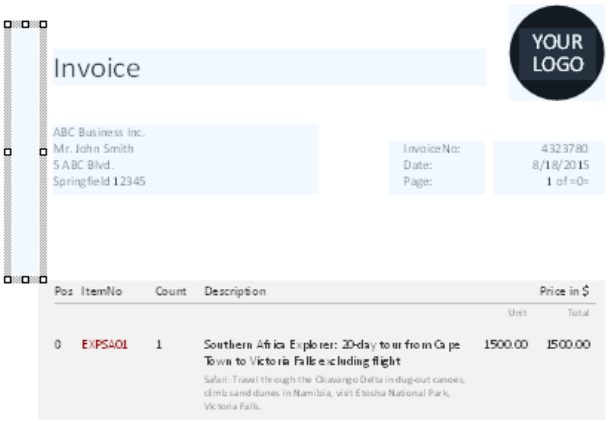


Figure 7.10: Invisible rectangular object above the table

5. Now interlink the table with the rectangle (main object) and select "Individual size and position adaptation" as the type of interlink.

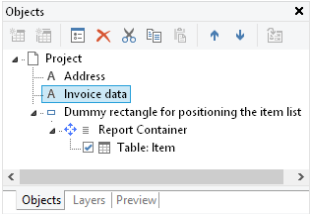


Figure 7.11: Spatial interlinks in the object list

6. On the "Vertical Interlink" tab, choose the position option "Relative to end" and the size option "Inverse".

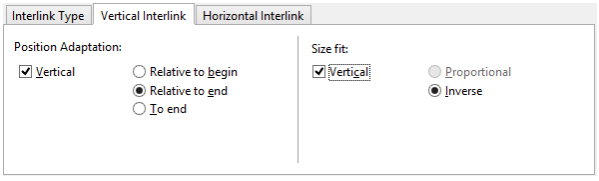


Figure 7.12: Interlink options in the object list

The table now changes its position based on the lower right corner of the rectangle (main object) and adjusts its height inversely in proportion.

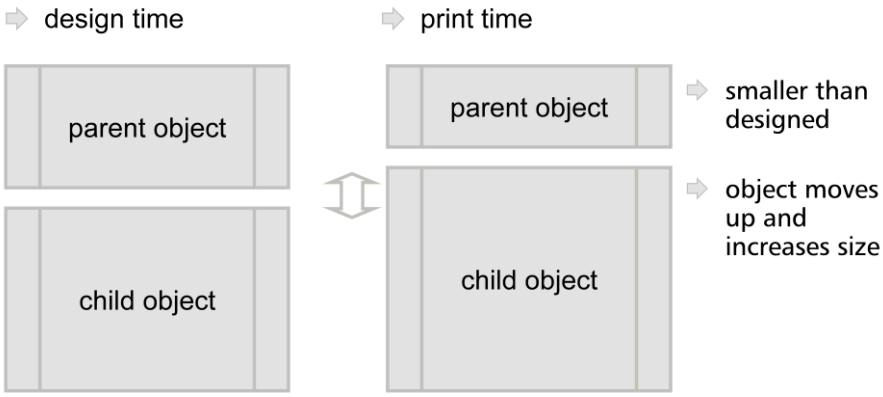


Figure 7.13: Diagram: Vertical, relative to end position adaptation and vertical inverse size adaptation

The Page()=1 appearance condition prevents the rectangle from being printed on the second page. Therefore, it "shrinks" by 80 mm on the second page, and the table moves upwards proportionally and becomes 80 mm larger.

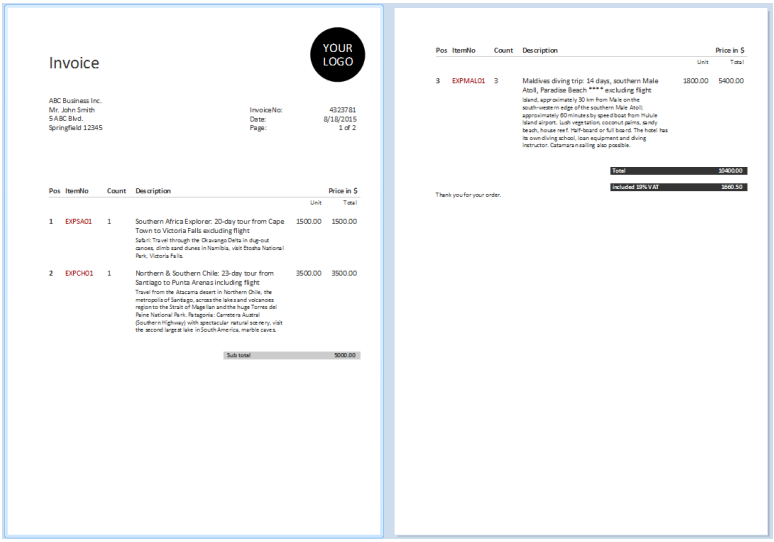


Figure 7.14: Position and size adaptation on the second page

Example: position adaptation, vertical to end: The interlinked object changes its position based on the main object. The size is also adjusted implicitly because the upper edge of the interlinked object changes based on the main object but the position of the main object does not change. The interlinked object must overlap the

main object. The main object must be larger than the interlinked object. If the main object becomes smaller, the interlinked object only changes its position from above and increases its size. If the main object becomes larger, the linked object shrinks (the main object must be in the foreground).

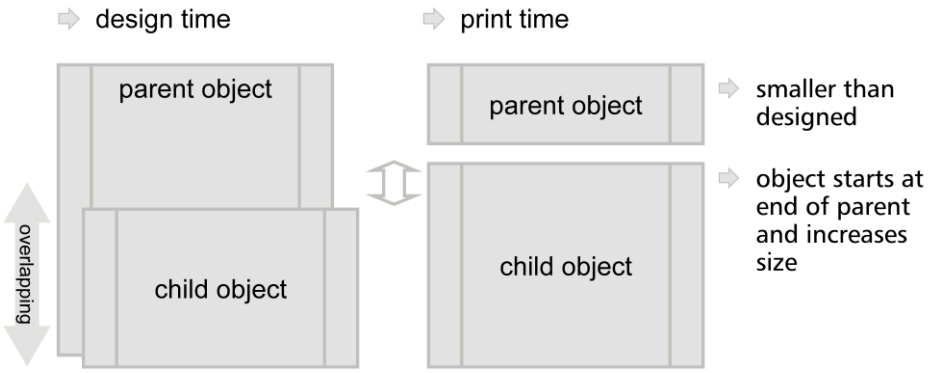


Figure 7.15: Diagram: Position adaptation vertical, to end

Example: position adaptation, vertical, relative to begin: The interlinked object changes its position based on the upper left corner of the main object. This type of interlink is the exact opposite of "vertical, relative to end". Example: The main object moves upwards due to the "Alignment bottom = True" setting in the Designer and the interlinked object follows this position adaptation in an upwards direction.

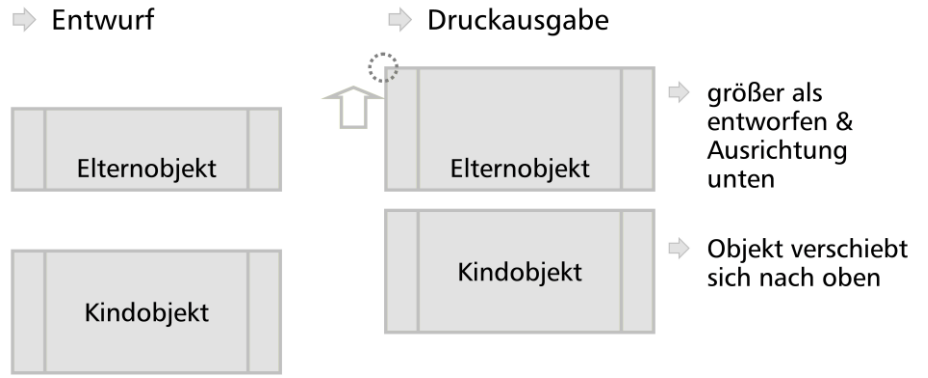


Figure 7.16: Diagram: Position adaptation, vertical, relative to begin

7.1.5 The "at end, keep size" Interlink

This kind of interlink is similar to position adaptation. But here, the main object's available space is taken into consideration and the interlinked object always keeps its size. In other words, the object is always output within the boundary of the main object. If the available space is not sufficient, a page break will be triggered.

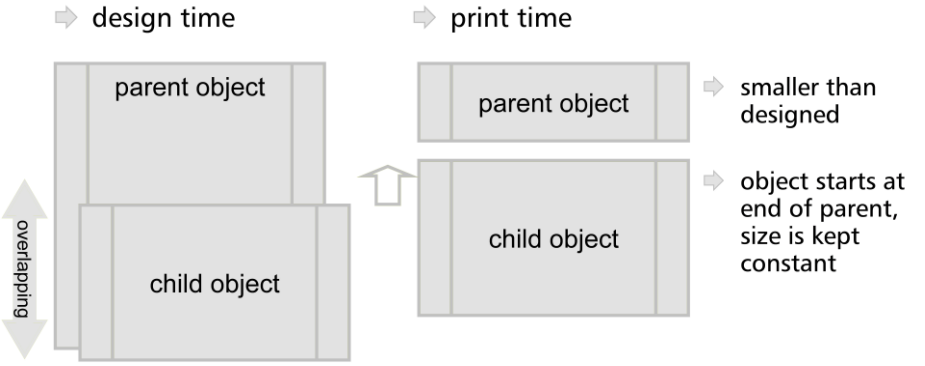


Figure 7.17: Function of the "At end, keep size" type of interlink

The interlinked object must overlap the main object in the Designer. It is crucial that the main object is always larger than the interlinked object. The interlinked object always tries to occupy the space remaining from the original size of the main object and, if the interlinked object is larger, this leads to an infinite loop because there is never enough space.

Example: Assuming you want to output a scanned signature after a text. The size of the signature must not change and it must be output within the border of the text object.

You therefore create a picture object and position it directly on the formatted text object. The height of the picture object is less than that of the table object.

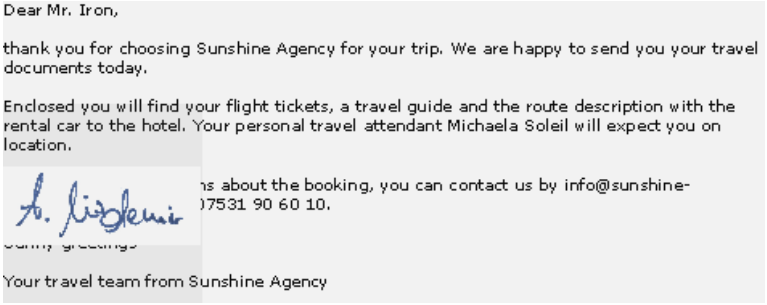


Figure 7.18: The interlinked picture object overlaps the main object in the Designer

Select the picture object in the object dialog and interlink it with the formatted text object. Choose "At end, keep size" as the type of interlink.

Irrespective of where the text ends, the picture object will always be output after the text in the specified size. If there is no longer sufficient space after the text, the picture object will be output on the next page so that the size can be kept.

Dear Mr. Smith,

thank you for choosing Sunshine Agency for your trip. We are happy to send you your travel documents today.

Enclosed you will find your flight tickets, a travel guide and the route description with the rental car to the hotel. Your personal travel attendant Michaela Soleil will expect you on location.

If you have any questions about the booking, you can contact us by info@sunshine-agency.de or by phone 07531 90 60 10.

Sunny greetings

Your travel team from Sunshine Agency

Figure 7.19: The signature is output at the end without changing the size

In this way you can also position multiple objects after each other (e.g. charts, pictures etc.).The "Base object" of the chain is the first object in the interlink hierarchy with an active page break.

7.2 Filter

7.2.1 Project Filter

Choose Project > Filter to define a filter condition. Only the records matching the condition displayed in the report.

7.2.2 Data Filters for Objects

Use the property Data Filter to also define a filter condition for report container elements. Only the records matching the condition are displayed in the object or element.

The filter condition – depending on data source and application – will be checked for compatibility with the database system and then executed there completely or partially. This can result in a considerable performance increase.

There are three different modes for a filter:

1. Full compatibility to database. Many of the built in functions can be fully translated to native database statements. If the data source, for example, is a SQL Server, many operators and functions can be supported (Left$, Right$, Mid$, Round, StartsWith, EndsWith, Contains, Upper$, Lower$, Year, Month, Day, Len, Empty, DateInRange, NumInRange, Artim$, LTrim$, RTrim$). Microsoft's SQL Server can support some additional date functions like AddDays, AddWeeks and the like.

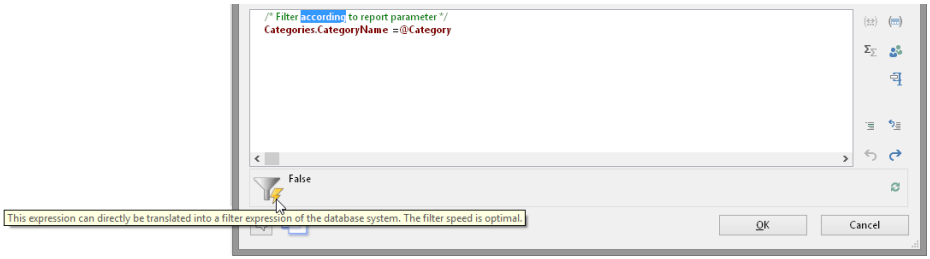


Figure 7.20: Full compatibility to database

- Partial compatibility to database. This means, a part of an expression can be translated where another part (that is concatenated with "and") can not. In this case, the supported part is done using native filtering whereas the unsupported part is done by the reporting engine.

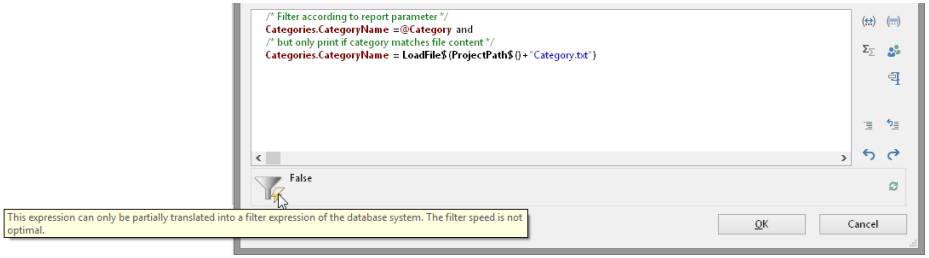


Figure 7.21: Partial compatibility to database

2. No compatibility to database. The filtering is performed by the reporting engine. You should try to change the filter condition to a supported syntax.

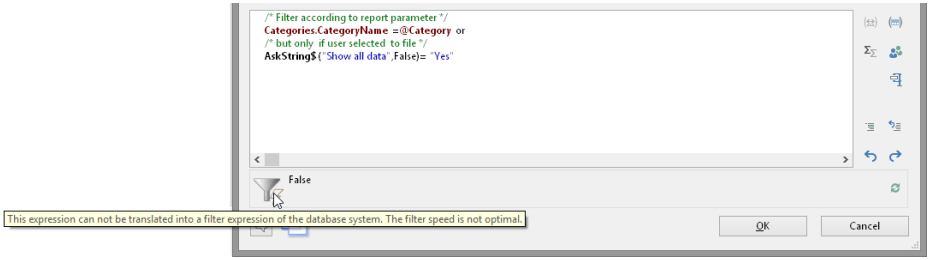


Figure 7.22: No compatibility to database

7.3 Sum Variables

Sum variables offer another way of creating totals and counters and work fundamentally across tables.

They are therefore a good choice whenever you want to create totals across different table hierarchies.

In all other cases, we recommend the use of the aggregate functions Sum(), Count() and CountIf() for totals and counters. Aggregate functions are always table-specific. You can even produce statistical analyses directly with aggregate functions e.g. Median(), Variance(), StdDeviation(). You will find a list of all functions in the "Aggregate functions" function category in the formula wizard.

Sum variables can be used to create totals over data sets, e.g. to add up the "Item.UnitPrice" fields in a table in order to calculate the total price. Such totals are permitted for all numeric variables or for expressions that return a numeric value as the result.

But sum variables are also a convenient way of defining a counter which can be updated accordingly for each data record that is printed.

You can create a total across all data sets of a printed page (page totals) or across the entire project (grand totals).

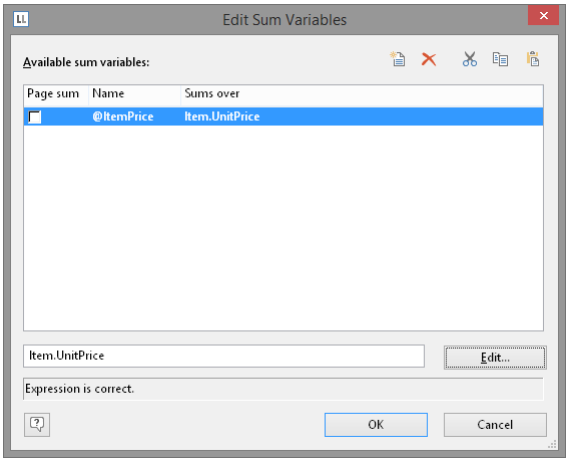


Figure 7.23: Totaling with sum variables.

Proceed as follows to define the variables:

1. Choose **Project > Sum Variables** or the **"Edit sum variables"** button in the formula wizard.
2. In the dialog that follows, create a new sum variable via the "Insert a new variable" button.

3. An input dialog appears where you can enter a description of the new variable. Give the variable a meaningful name, the "@" character will be added automatically as a prefix.
4. Click the "Edit" button to open the formula wizard and assign a field or an expression to the new sum variable.

   For example, select the numeric field "Item.UnitPrice" if you want to add up the "Item.UnitPrice" column.

   You can, however, also perform aggregations with complex expressions provided that the result is a numeric value. For instance, you can add up the gross price from the net price and the VAT. Enter the following expression, for example, in the "Sums over" field:

   ```
   Item.UnitPrice + Item.UnitPrice * (Item.VAT/100)
   ```

5. If you don't want to add up any values but merely want to create a counter or a numeration, the definition is simple: In the "Sums over" field, simply enter the value that is to be added to the existing counter.

   The simplest case is a consecutive number that is increased by 1 for each data record. Just enter the value "1".
6. The "Page sum" checkbox lets you specify whether the totals are to be set to 0 at the end of a page. In this way, you can define page totals and counters.
7. Once you have defined which sums are to be stored in which sum variables, you can use these sum variables in your objects. In the formula wizard, you will find the sum variables at the end of the variable list in the "Sum variables" folder. In the tool window "Variables-/Field-List", the sum variables can be directly edited by double clicking and via a context menu.

7.4 User Variables

User variables are a way of saving values and expressions for later use. This saves you having to enter them anew each time if they are frequently needed in precisely this form or if user-defined data is to be output repeatedly. They are, so to speak, "formula building blocks".

You can then store these user variables in project includes if they are also to be used in other projects.

Note: User variables cannot be used within appearance conditions for layers.

You can also use the SetVar() and GetVar() functions if you only want to save values in the variable repository for later use. You will find more information about functions in the chapter "Overview of Functions".

Proceed as follows to define user variables:

1. Choose **Project > User Variables** or the **"Edit user variables"** button in the formula wizard.
2. In the dialog that follows, create a new user variable via the "Insert a new variable" button.
3. An entry dialog appears where you can enter a description of the new variable. Give the variable a meaningful name, the "@" character will be added automatically as a prefix.
4. Click the "Edit" button to open the formula wizard and assign a field or an expression to the new user variable.

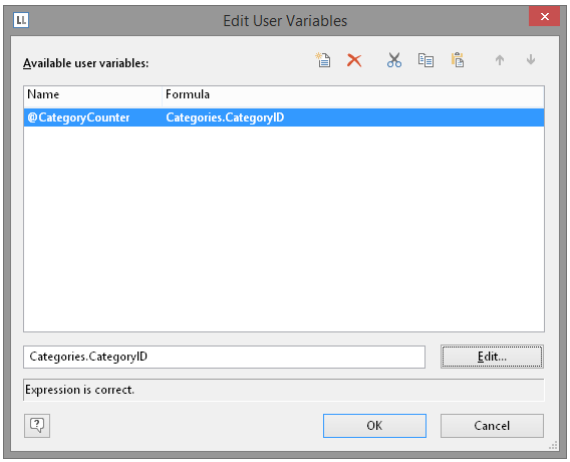


Figure 7.24: Edit user variables

5. You can use the arrow to specify the evaluation order. The variables are evaluated from top to bottom.
6. Once you have defined the user variables, you can use them in your objects. In the formula wizard, you will find the user variables at the end of the variable list in the "User variables" folder. In the tool window "Variables-/Field-List" the user variables can be directly edited by double clicking and via a context menu.

7.5 Collection Variables

As with user variables, collection variables enable you to save values and expressions for use at a later point in time. Collection variables also allow you to summarize and categorize data, as well as label it with additional attributes.

These collection variables can also be transferred to project includes if they are also to be used in other projects.

Example: Displaying average price for each article category as a chart.

What we have are article numbers which reflect their category:

- Article number begins with "EX": Travel
- Article number begins with "RNT": Rentals
- Article number begins with "TRP": Short trips

Hence, there is no category field in the data that you can e.g. use in a chart in order to display the average price of an article for each category. With collection variables, you have the ability to combine the data of the various categories and to define properties such as a category name or a color.

For the definition of collection variables, proceed as follows:

1. Select **Project > Collection Variables** or click on the button **"Edit Collection Variables"** in the formula assistant.
2. In the dialog that appears, click on "Insert new Variable" to create a new variable. An input dialog then appears asking you to name the new variable. Give it a distinctive name, e.g. "Category". The "@" character is automatically appended to the front of the name.

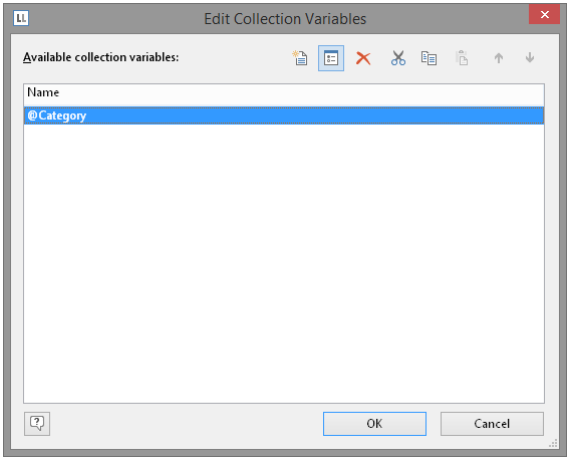


Figure 7.25: Edit Collection Variables

By clicking on the arrow buttons, you can define the order in which the analysis takes place. Variables are analyzed from top to bottom.

3. A dialog appears for the editing of the collection variable "Category". Click on the button "Insert New Variable (Column)" to add 2 sub-variables: "Name" and "Color".

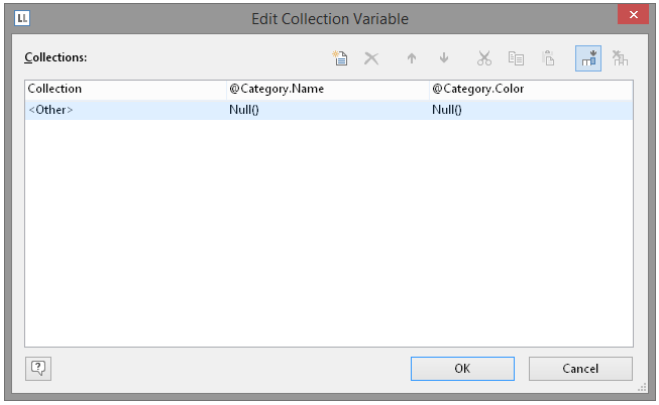


Figure 7.26: Define Variables for the Collection

4. Click on the button "Insert new collection" to insert the category definition. For our example with the article number, select the entry "Wildcard".

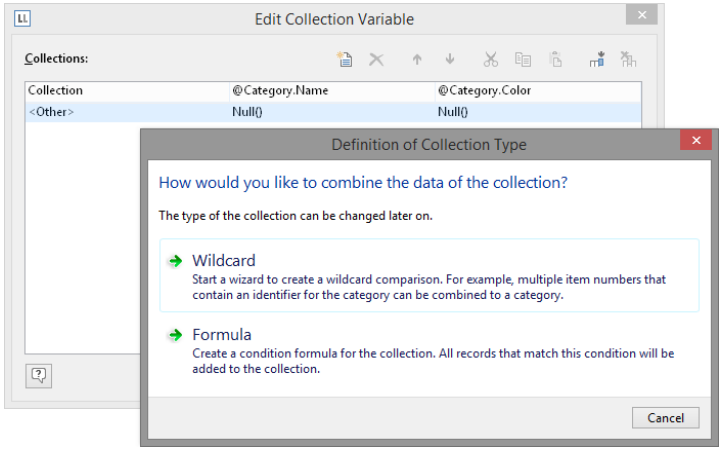


Figure 7.27: Definition of the Collection Type

5. A dialog appears for wildcard matching. Select the field "Article Number" and enter the wildcard string: EX*. Add multiple entries as single lines. Supported wildcards are "*" and "?".

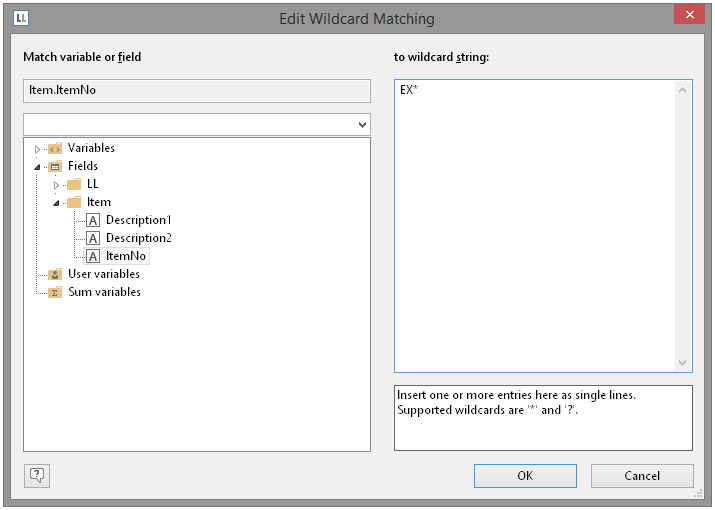


Figure 7.28: Edit Wildcard Matching

6. Repeat this step for the desired categories, adding a name and a color for each one. The dialog will then look like this:

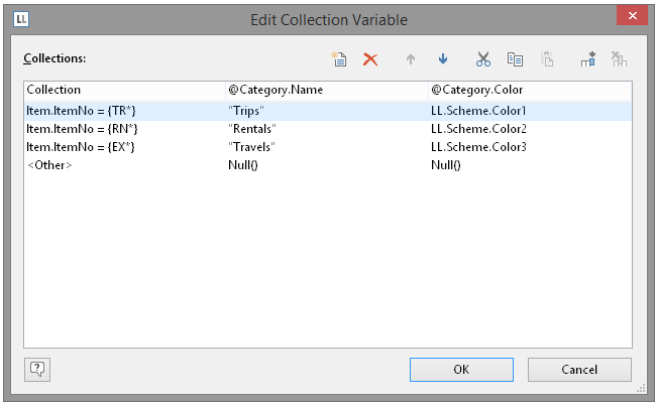


Figure 7.29: The Collection Variables

7. Once you have defined the collection variable, you can use it in your objects. In the formula assistant, you can find the variables at the end of the variable/field list in the folder "Collection variables".
8. You can now use the collection variable "@Category.Name" in the diagram as a coordinate value for the x-axis.
9. Output the average price of all articles as the y-value.

10. Use the collection variable "@Category.Color" as the color. To do so, click on the tab "Colors". Under "Fixed Colors", enter "True" as the condition and place the collection variable "@Category.Color" in the field "Formula".

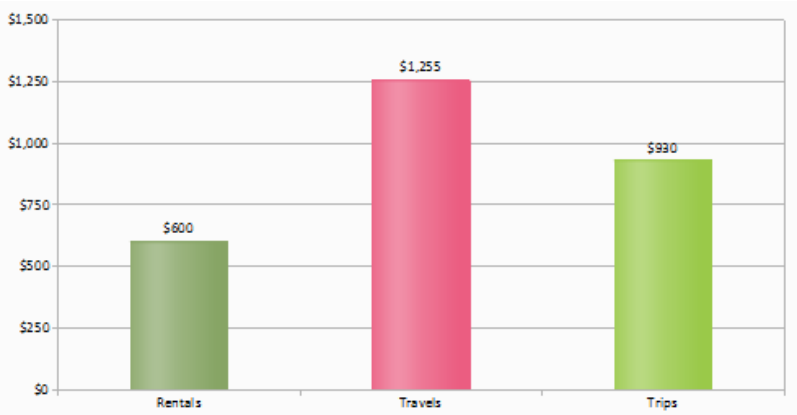


Figure 7.30: Average Price per item

7.6 Project Includes

If you design several similar projects, it's a good idea to include other projects as "Includes" to avoid having to create elements that occur repeatedly in each new project. In this way, you can easily include a letter head, for example, and any changes can be made centrally, e.g. if the design changes.

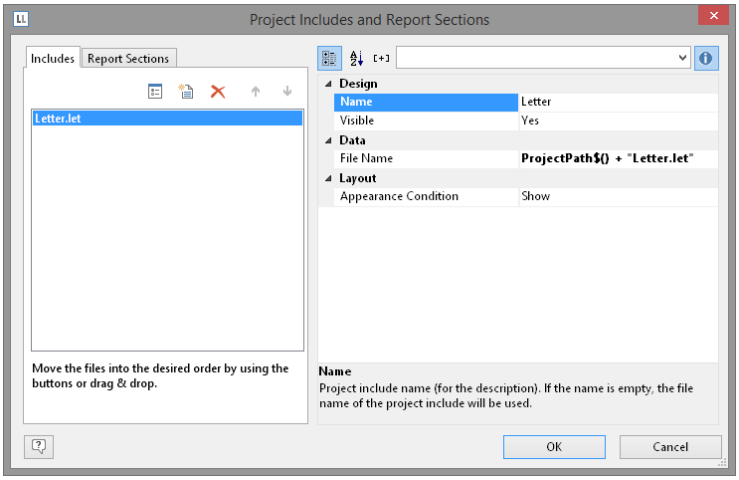


Figure 7.31: Dialog for project includes

Or user variables that are used repeatedly (e.g. complex formulas in address fields) can be stored in includes.

- Includes may contain other includes.
- Elements can be interlinked with elements in includes; the element in the include is always the parent element because it is printed first.

Via **Project > Include**, you can add other projects as includes.

- You can see the objects in the workspace and the object list. Project includes are always inserted at the beginning of the object list
- A button allows you to hide includes in the object list.
- Totals and user variables are read and used in the same way. When designing includes, please make sure that you do not cause any overlaps (e.g. use a project with a sum variable as a include which is already contained in the current project).
- You can specify the name, visibility and appearance condition for each include by means of the property list. The buttons let you specify the (print) order.
- Use the Edit button to open and edit the include in a 2nd instance of the Designer. After you edit the objects close this 2nd instance of the designer.

7.7 Insert PDF Pages

PDF objects are used for displaying multipage PDF content.

Also see "PDF" in chapter "Overview of Properties".

7.8 Insert HTML Pages

HTML objects are used for displaying HTML content. You specify the HTML page by specifying the file name (e.g. combit.htm) or the URL (e.g. www.combit.net) in the object properties, or by means of the formula wizard.

Also see "HTML Text Objects" in chapter "Overview of Properties".

7.9 Insert OLE Documents

Use the OLE container object to embed OLE server documents. In this way, you can embed documents from other applications (e.g. Word, Excel, Visio, MapPoint) in a report. Only the first page will be displayed as there is no standard for multi-page OLE objects. For the content, there are three options available:

- Filename: Link to a file that needs to be available at print time.
- Embedded: You select the object type via the standard Windows dialog "Insert Object". Here you can choose an existing file ("Create from File") or create a new

file. The object will be embedded in the project. This can be useful e.g. for simple drawings or rather static objects.

- Formula: Allows a formula for the file name.

7.10 Insert Form Template Objects

Form templates are images, i.e. scanned forms, which you place in the background of your workspace as a template. This lets you position objects in a project precisely to fit the form. Although form templates are shown in the workspace, they are not printed and cannot be modified.

The best way of positioning them is by means of the property list.

To place a form template in the background of your workspace, choose **Insert > Form Template** (Objects > Insert > Form Template). Once you have created the template, it's best to use the objects tool window to select it. Form templates cannot be selected by clicking in the workspace.

For more information about the properties, see "Form Template Objects" in the chapter "Overview of Properties".

8. Page Layout

You can influence the layout of your report in many different ways. In this chapter, we will examine the possibilities offered by different layout regions, define a multi-page report and control the page break behavior.

8.1 Specifying the Page Layout

Your first task in a new project is to set up the page layout that you want. Choose Project > Layout Regions (Project > Page Setup) to specify properties such the choice of printer, paper size and orientation. There are different layout options depending on the project mode (label or list).

With multi-page projects, it is sometimes a good idea to choose different layout settings, e.g. printer, page size, orientation, paper bin, for the different pages. You will find more information about this in the chapter "Page Layout".

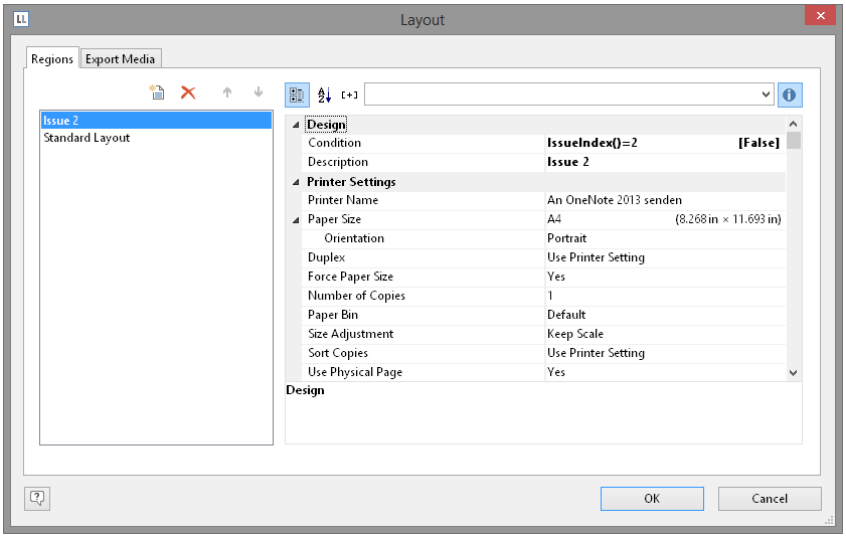


Figure 8.1: Definition of the layout regions

When you modify the orientation (portrait/landscape), a dialog will allow you to determine if the objects are to be automatically adjusted to the new orientation.

8.1.1 Printer Settings

By means of the properties, you can make different settings for each layout region for printer, page size, orientation, duplex print, number of copies, sort copies and paper bin (e.g. first page on company letterhead and normal paper for the following pages).

The printer settings (and changed export format options) are saved in a special file (e.g. Article_List.lsp). If the respective file is not available when printing, the current default Windows printer is used.

Size Adjustment

Specifies whether the project is to be adjusted to fit the page when different printers are used when printing from the preview or whether the scale is to be kept.

Use Physical Page

Specifies whether the whole physical page, including the non printable margin area, is to be available in the Designer. This is sometimes necessary in order to position labels correctly, e.g. if you use sheets of labels without margins. The non-printable page margins are shown as hatched areas in the preview.

This enables you to use the complete page when defining the layout of your project but, of course, the printer cannot print these margins. If you place objects on such projects, you must still consider the non-printable margins. If this property is set to "False", only the area that can actually be printed is shown in the workspace.

Force Paper Size

If there is no printer definition file, the application tries to force the page size set during design (e.g. Letter) as far as possible. This is only possible, however, if the selected printer supports either exactly this size or the "user-defined" option. If this is not the case, it will first check whether the printer's default size is large enough, otherwise it will choose the next largest size.

8.1.2 Export Media

This list shows the various export possibilities.

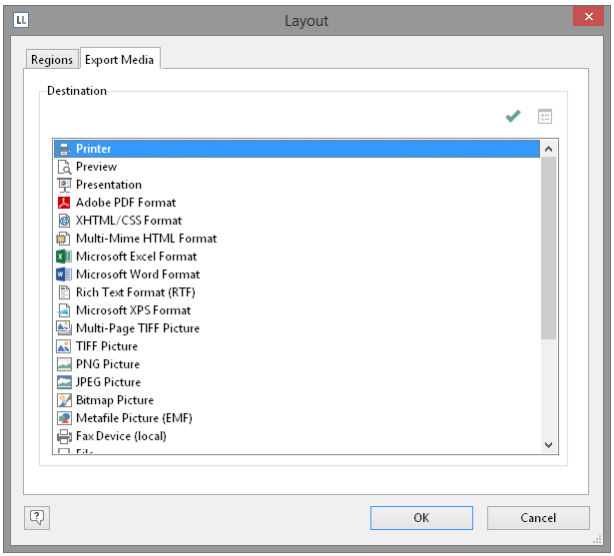


Figure 8.2: Default setting for the output format

With the two buttons on the upper right, you can define a selected format as the default value for the later print and specify the options for this format. These options are saved in a special file (e.g. Article_List.lsp).

8.1.3 Templates for Label Formats

Via the "Templates" tab in the page layout for labels, you can make your selection from numerous predefined label formats from different manufacturers. This automatically specifies the size of the individual labels, how many are to appear on the sheet and how they are to be distributed.

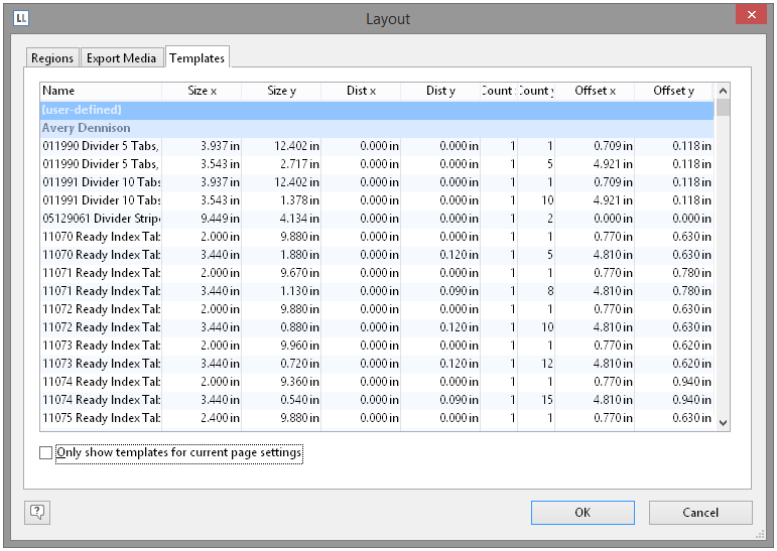


Figure 8.3: Definition of the label size

8.1.4 Defining Your Own Label Format

You can also define your own label formats if you can't find the layout that you want among the templates. You can make the required settings with the "Layout Definition" region property; there is a special dialog for this:

- Offset: The offset specifies the horizontal or vertical distance of the upper left label to the margin of the chosen page region (physical/printable)

> Note: In the screen display, the upper left corner of the workspace always starts at coordinates 0/0 irrespective of the chosen page size and specified offset. However, you will see the effect of the offset in the preview or when printing.

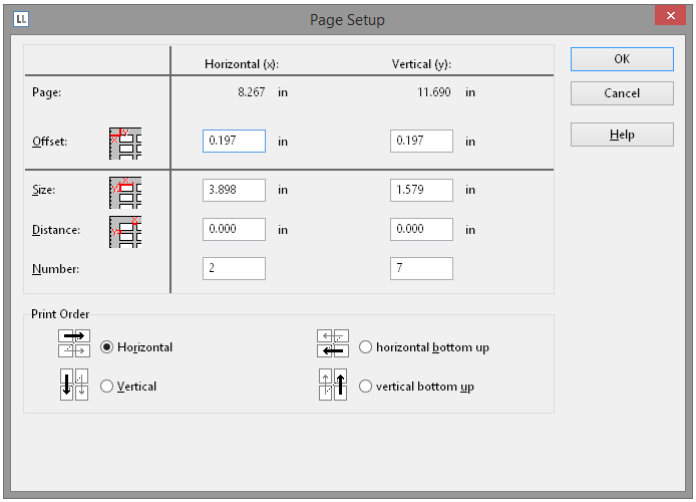


Figure 8.4: Defining customized label layouts

- Size: This value defines the size (horizontal=width / vertical=height) of the label.
- Distance: The distance to the next label is specified here. With single-column labels, only the vertical distance must be entered.
- Number: This option specifies the number of labels per page (horizontal number = number of columns per page, vertical number = number of rows per page).
- Print Order: Specifies the order of the print if multiple labels are printed on a page. Possible values: 0 (horizontal), 1 (vertical), 2 (horizontal bottom up), 3 (vertical bottom up).

  The default is to print labels row by row from the upper left to the lower right (horizontal). However, in the case of sheets of labels that have already been started, it is possible that the first label row has already been used. This causes a loss of stiffness in the upper part of the sheet. Many printers have problems feeding in sheets that have already been started, resulting in a paper jam. In this case, it helps to print the labels in reverse, from the bottom upwards instead of from the top downwards. In this way, the upper row of labels on the sheet is always printed as the last and the sheet retains the stiffness required for feeding in.

Saving your own label formats in the label template list

To save your own label formats, you can edit the file "cmll2101.inf".

Layout of a label definition (all measurements in 1/1000 mm):

<A> <B>, <C> = <D>, <E>, <F>, <G>, <H>, <I>, <J>, <K>

A: code, B: description, C: page size, D: label width, E: label height, F: horizontal distance between labels, G: vertical distance between labels, H: number horizontal, I: number vertical, J: margin left and right, K: margin top and bottom

e.g. 3420 universal labels, 70 x 16.9 mm = 70000, 16900, 0, 0, 3, 17, 0, 4850

8.2 Layout Regions

With multi-page projects, it is sometimes a good idea to choose different layout settings, e.g. printer, page size, orientation, paper bin, for the different regions.

You define the layout regions with Project > Layout Regions (Project > Page Layout).

You create a new region with the relevant button on the "Layout" tab and then define the properties for this region.

You will find a detailed explanation of the properties in chapter "Overview of Properties".

8.2.1 Active Design Layout

If you define different layouts, you can decide which layout is to be displayed as the workspace. The "Active Design Layout" project property lets you choose from all defined layout regions.

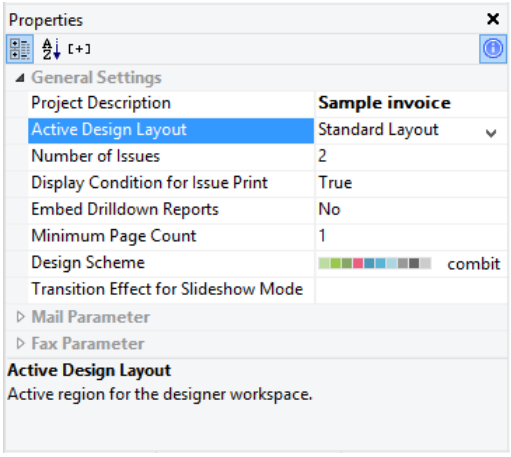


Figure 8.5: Selecting the active design layout

8.2.2 Practice: Report With Different Page Orientations

Let's assume that you want to change the page orientation within a report: the first section with the bar chart is to be printed in portrait mode, the second section with the cross tab in landscape mode and the remaining section with the pie charts in portrait mode again.

The report should look like this:

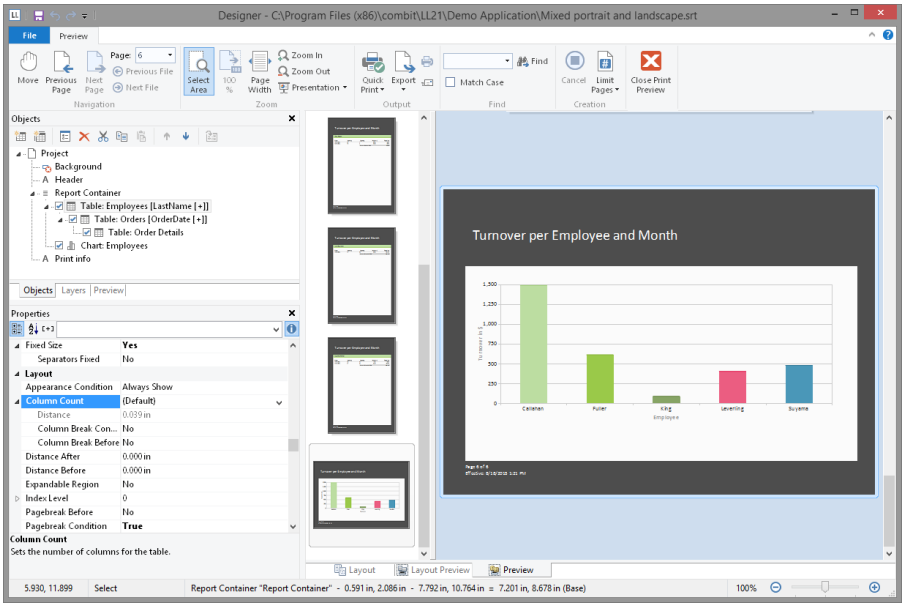


Figure 8.6: Report with different layout regions

Proceed as follows:

1. Position the report container on the workspace and create the bar charts, pie charts and the cross tab. You can find more information about this in the chapter "Producing Analyses".
2. Since you want to change the page orientation, you must also adjust the height and the width of the report container. If you don't do this, the crosstab data will be truncated when the report container is positioned in portrait mode.

   Select the report container in the "Objects" tool window and use the LL.Device.Page variables and the UnitFromSCM() function to specify the height and width:

Position	[0.394, 0.394, 7.874, 11.299 in]
Left	**UnitFromSCM(10000)** **[0.394 in]**
Top	**UnitFromSCM(10000)** **[0.394 in]**
Width	**LL.Device.Page.Size.cx-UnitFromSCM(20000)** **[7.480 in]**
Height	**LL.Device.Page.Size.cy-UnitFromSCM(20000)** **[10.905 in]**

   Figure 8.7: Size of the report container defined variably

3. Create headings by adding a Table > Free Content element in each case.
4. Enter "Orders per Customer" as the name of the crosstab's heading. This element name will then be available later in the "LL.CurrentContainerItem" field.

5. So that the titles are always printed at the beginning of a page, set the "Pagebreak before" property to "Yes" in each case. This will produce a page break before outputting the element.
6. Now define the layout regions. Select Project > Page Setup.
7. The dialog for defining the layout will now appear. The default region "Standard Layout" is always the last area with the "True" condition and cannot be renamed. Leave "Portrait" as the orientation for this layout.

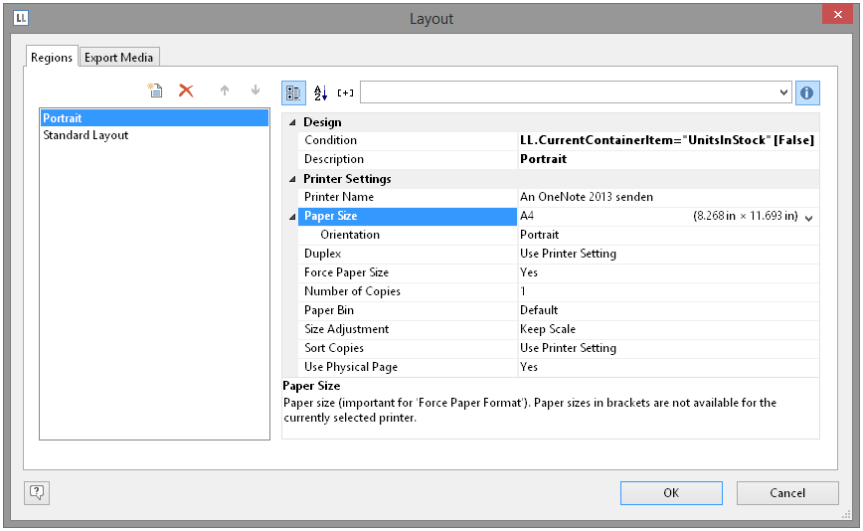


Figure 8.8: Layout definition for a particular element

8. Create a new region with the "New" button. Enter a meaningful name for this layout in the "Description" property, e.g. "Landscape".
9. Then specify the specific properties for this layout. Change the "Orientation" property to "Landscape".
10. You can specify when this layout region is to be used as a "Condition." In this example, the mode must change when the element with the name "Orders per Customer" is printed. The formula for the logical condition is therefore: LL.CurrentContainerItem = "Orders per Customer".

8.2.3 Practice: Managing Issues (Copies)

Let's assume that you want to produce two copies of an invoice. The first copy is to be printed on a company letterhead in paper bin 1. The second copy is to be printed on the cheaper paper in paper bin 2.

1. In the project properties, enter "2" in the "Number of issues" property.
2. Open the dialog for the report container via **Project > Page Setup**.

3. Create a new region "Original". In this case, use the IssueIndex() function as the "Condition". This function returns the number of the issue. So you define the logical condition "IssueIndex()=1". Select paper bin 1 for this layout.
4. Create a layout called "Copy" and define the logical condition "IssueIndex()=2". Select paper bin 2 for this layout.

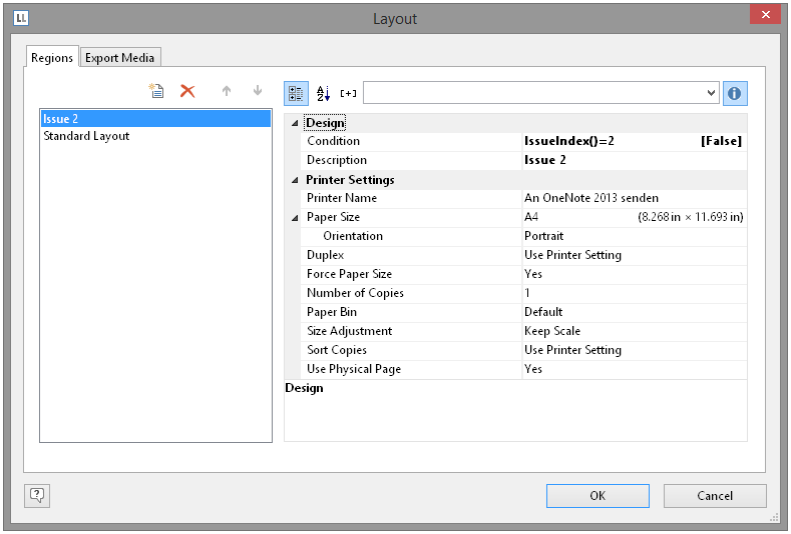


Figure 8.9: Definition of the layout regions

If you want to endorse the second copy additionally with the text "Copy", carry out the following steps:

1. Create a text object containing "Copy".
2. Select the text object in the object dialog and set the value of the "Display condition for issue print" object property to IssueIndex()=2. This text object will now only be printed on the second copy.

8.2.4 Practice: Payment Form on the Last Page

Let's assume that you want to print a payment form on the last page of a multi-page invoice. The payment form is preprinted on a special paper in paper bin 2 in the lower range of the page. The field contents have to be printed exactly at the correct positions.

Proceed as follows:

1. Open the dialog for the layout regions by **Project > Page Setup**.
2. Create a new region "Last page". Use the function Lastpage() as a condition that returns the value "True" if the last page is printed. Choose paper bin 2 for this region so the last page will always be printed on the special payment form preprint from paper bin 2.

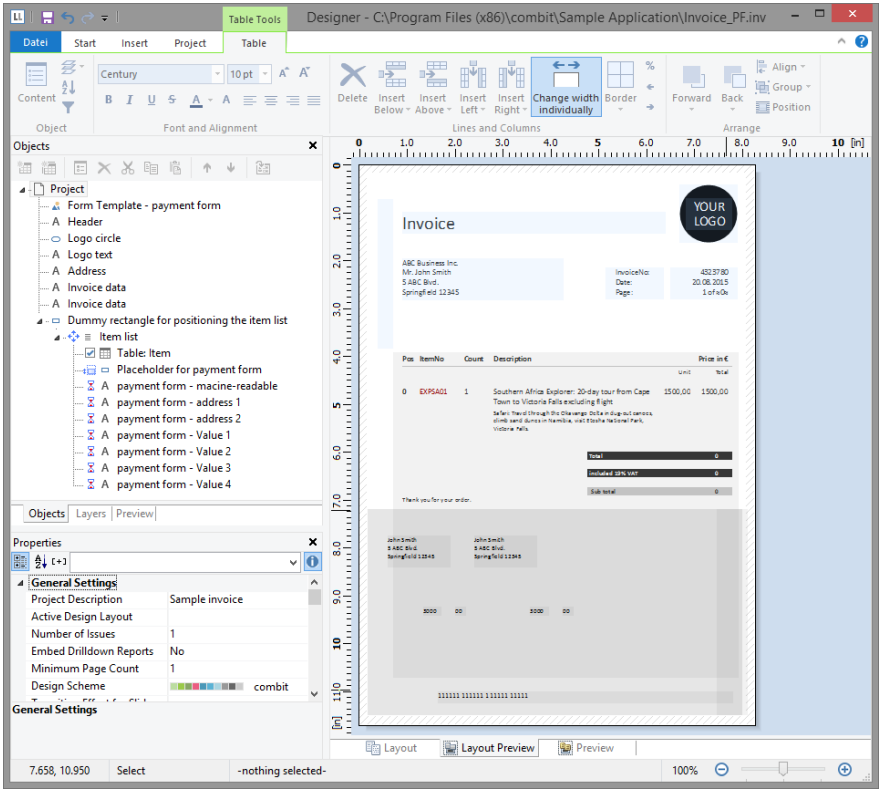


Figure 8.10: Invoice with fields and placeholders for payment order

3. Position the text objects for the field contents of the payment form exactly at the correct position. You can put a scanned-in picture of the payment form in the background by choosing/clicking Objects > Insert > Form Template.
4. Set the appearance condition of all text objects to Lastpage() to make sure they are only printed on the last page.
5. You have to link all text fields with the table as the function Lastpage() can only be evaluated correctly in tables, layout regions or objects linked to tables.

   Links are created and edited in the "Object List" dialog. Open this dialog by choosing/clicking Objects > Object List. Select the table object and link via text object of the payment form to it by clicking "Link with...". The interlink type "Sequential" is already selected. The sequential interlink is sufficient here as no changes in object position or object size are desired.

   Repeat these steps for all text objects.
6. Now you have to avoid that the fields of the payment form are printed on top of the table if the table ends on the last page in the area of the payment order.

Therefore create a placeholder by inserting a rectangle object without border and filling. The rectangle has the exact height of the payment form and has to overlap the table necessarily! Select the table in the object dialog and link the rectangle to it. Choose "At end, keep size" as interlink type. No matter where the table ends, the rectangle is always output in the selected size after the text. If there is not enough space after the table, the rectangle is output on the next page and a page break is triggered.

8.3 Report Sections

Via Project > Report Sections you can define a table of contents, an index and reverse side printing.

Via Project > Include, you can add other projects as includes. For more information about Includes see "Project Includes" in chapter "Advanced Functions".

8.3.1 Table of Contents and Index

Via **Project > Report Sections** it is possible to automatically create a table of contents and an index for reports. Contents and index are normal projects with predefined reference fields.

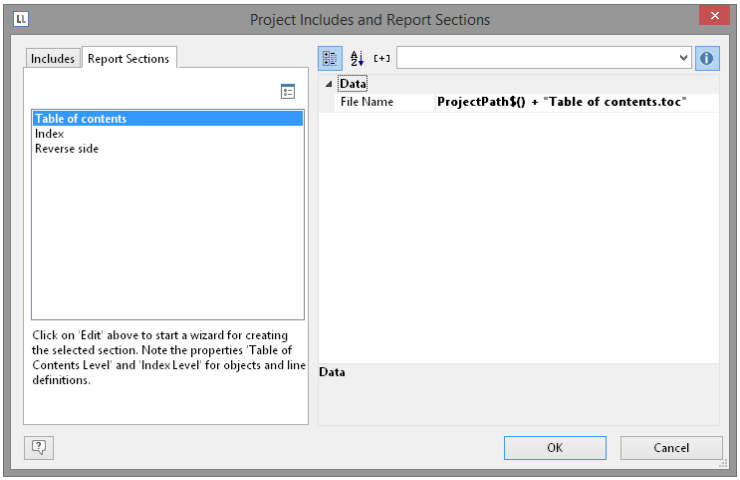


Figure 8.11: Dialog for integrating table of contents and index

In the Designer an entry for the table of contents and index can be defined for almost every element by means of its respective property "Table of Contents Level" or "Index Level". Via **File > Options > Project** you can set the maximum folder depth and index depth.

At the time of printing the corresponding values are read and the table of contents and index are added at the beginning and end of the project. The directory entries are also active links in the PDF and preview.

Proceed as follows:

1. Open the dialog to define the steps in the report via Project > Report Sections.
2. Select either the "Table of Contents" or "Index" section.
3. Click on the "Edit" button at the top in order to launch the wizard for creating the table of contents or index.
4. A dialog will open in which you will be able to create a new project. During this process you will be able to use a pre-configured, adjustable standard template. Alternatively, you could also open a pre-existing project.
5. Adjust the template as needed. You can open this print template and work on it at any time via the "File Name" property.
   - For the link text and the page number use the fields Reference.Text and Reference.PageNumber or Reference.Index.
   - To set the Table of Contents Level or Index Level in the Appearance Condition use the field Reference.Level.

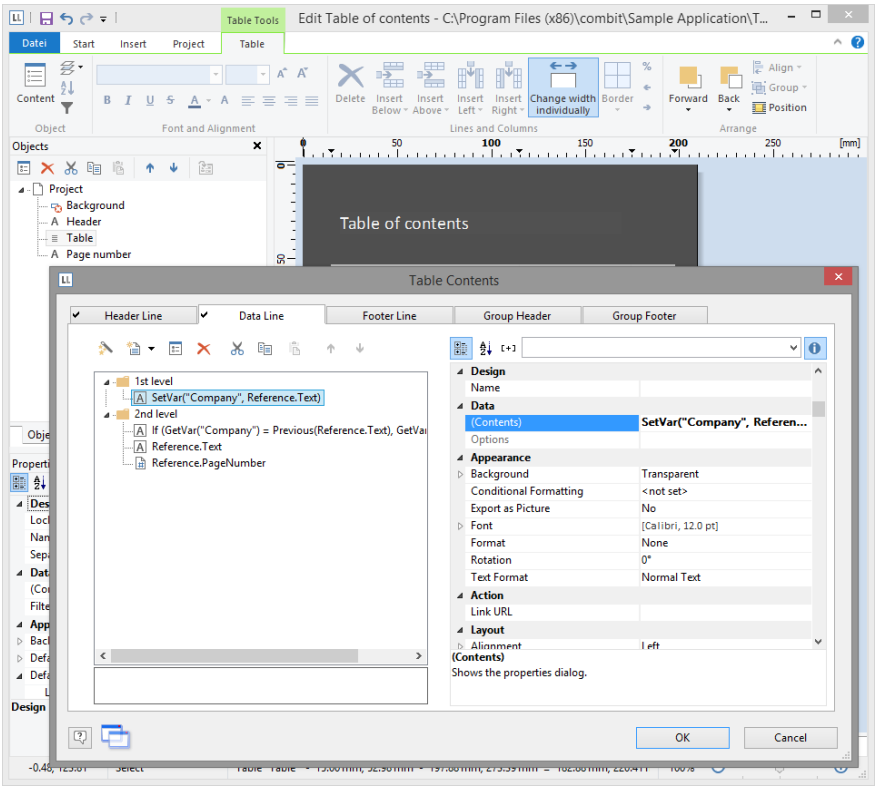


Figure 8.12: Separate project for the table of contents

8.3.2 Reverse Side

Project > Report Sections can be used to define a reverse side for printing. The corresponding values will be evaluated at print time and the file will be output on every reverse side or only on the first or after the last page.

This function is useful to print the general terms and conditions on the reverse side of the last page of an invoice for example.

Proceed as follows:

1. Open the dialog via Project > Report Sections.
2. Select the "Reverse Side" section.
3. Define the print position for duplex print in the property list: Reverse Side of the First Page, Reverse Side of All Pages, After the Last Page. Define also the position for Non-Duplex Print or Export.

Hint: In the preview the reverse side is displayed at the end.

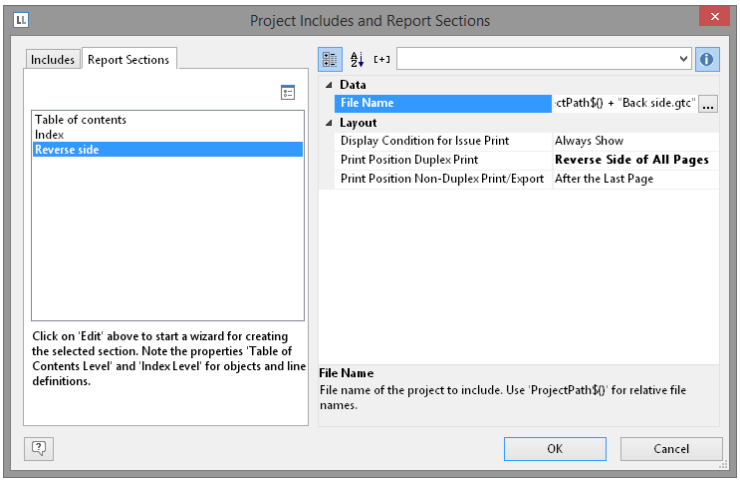


Figure 8.13: Dialog to create a Reverse Side

4. Click on the "Edit" button at the top in order to launch the wizard for creating the Reverse side.
5. A dialog will open in which you will be able to create a new project. During this process you will be able to use a pre-configured, adjustable standard template. Alternatively, you could also open a pre-existing project.
6. Adjust the template as needed. You can open this print template and work on it at any time with the "File Name" property.

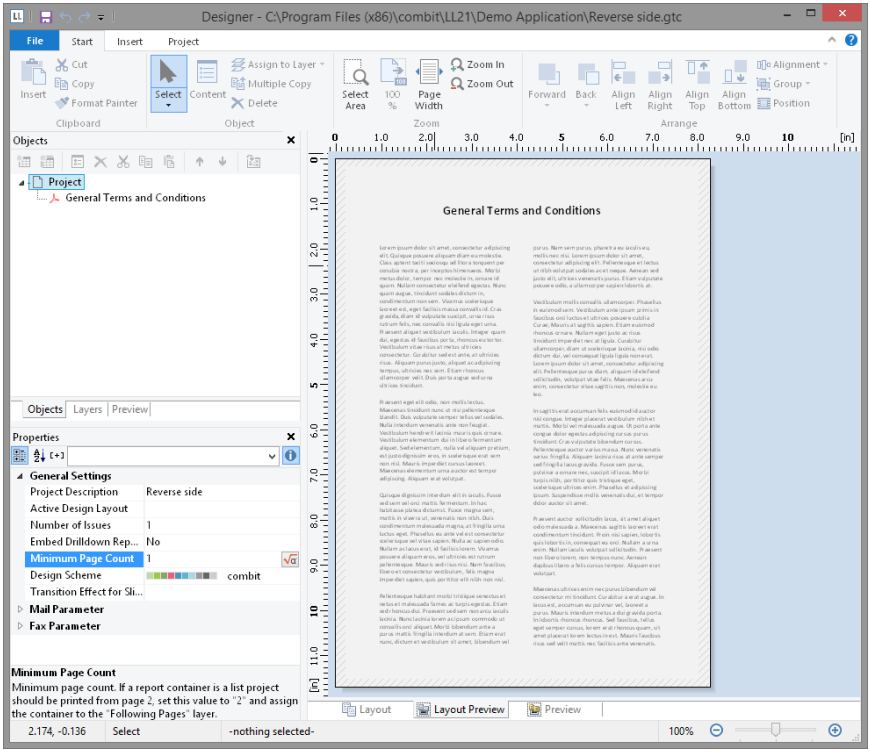


Figure 8.14: Separate project for the reverse side

9. Output Options

There are two ways of printing projects: Start the print from the higher-level application or via the real data preview in the Designer (if supported by the application).

9.1 Output Options

You can start the print function directly from the higher-level program, via a menu item or from the preview.

If you start the print from the higher-level program, the print settings dialog will normally appear once you have selected the project to print.

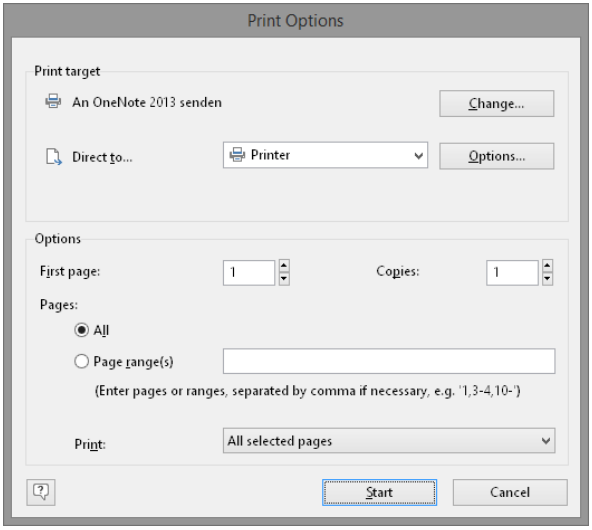


Figure 9.1: Output options

You have various configuration options here:

- Under "**Print Target**", you can change the printer settings. If you have defined different layout regions in the page layout dialog, you can also change the printer settings here for the various regions. Enter the number of copies under "Issues".
- Select the output format (e.g. preview, printer, PDF) under "**Direct to**".
- The "**Preview**" option lets you view the output first on the screen as it would be printed. In this way, you can check the result before printing.
- If you select the "**Save options permanently**" setting, your choice of printer and output format will be saved as default values for this print template.
- With "**First Page**", you specify the page number which the numbering starts with.

- "Pages" lets you select certain pages or a page range for printing, e.g. 1, 3-4, 10-.
- The "Print" drop-down list lets you restrict the output to even/odd pages or the pages that you have selected above.
- When printing labels, you have an extra "Select" button which you can use to specify the position where you want to start printing the sheet of labels.

  In this way, you can also print sheets of labels that have already been partly used. You will find a sample label sheet for your label project in the dialog for selecting the start position. Click the label where the print is to start. Please take note of the selected print order. You can print not only in rows from upper left to lower right but also column for column or in the reverse direction. The labels will be printed in the specified direction starting with the selected label.

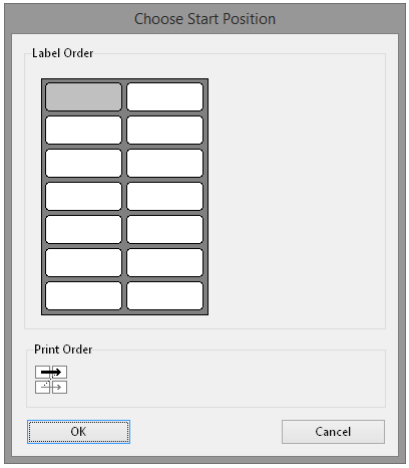


Figure 9.2: Additional print settings for labels

9.2 Real Data Preview

The real data preview function is also available directly in the Designer provided that your application supports it. In this way, you can check the layout of a printout without wasting paper in order to do so. The screen preview is accurate down to the last detail (WYSIWYG – What You See Is What You Get), exactly as it would be when printed. After checking the layout, the actual print can be started from the preview without having to use the print command again.

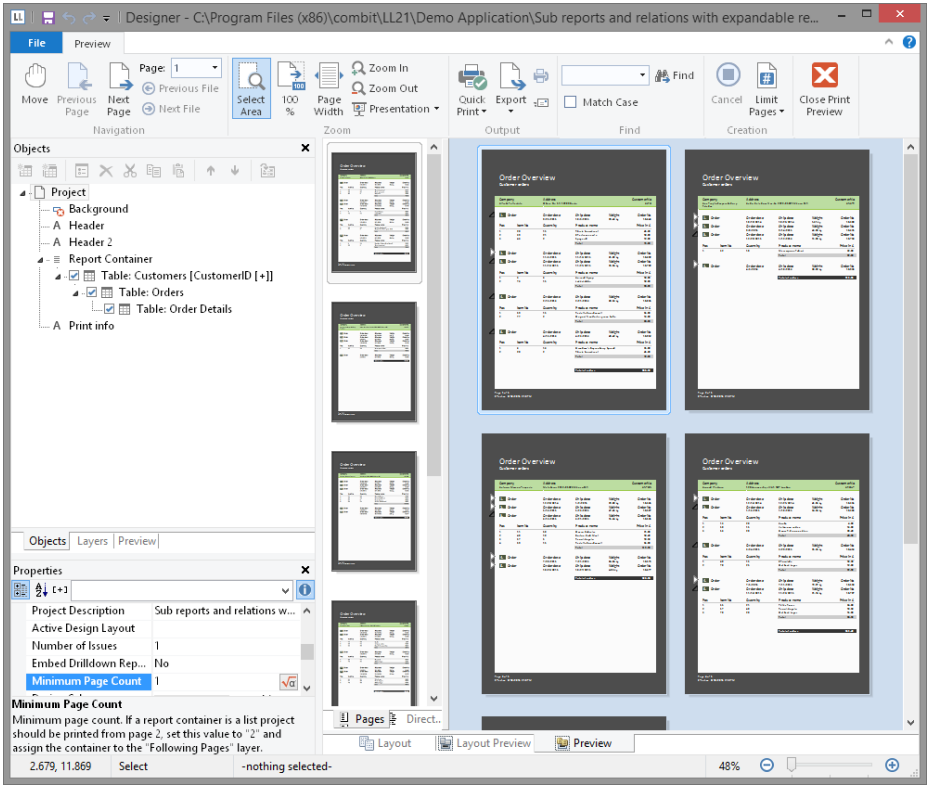


Figure 9.3: Real data preview in the Designer

- The pages are continuously displayed. Via "Move" you can move the viewing area with the mouse, otherwise use the scroll bar.
- Use "Zoom In", "Zoom Out", "Page width" and "100%" to adjust the view in the workspace.
  - If you zoom out, multiple pages are displayed.
  - A double click on a page gives a full page view.
  - Use the Zoom slider in the status bar to slide to the zoom percentage you requires (50% - 500%).
  - Hold the CTRL key and simultaneously rotate the mouse wheel to zoom with the mouse.
- With the find function, you can search all pages of the preview.
- The "Pages", "Directory", "Index" tabs are for fast, direct navigation. Information of contents and index, see "Report Sections" in Chapter "Page Layout".

- Via File > Options > Preview, you can specify the maximum number of pages that are to be displayed in the real data preview.
- The "Number of copies" specified in the print options is ignored in the preview as this is only relevant for the actual print.

9.3 Export in another Format (PDF, XLS ...)

You can also output a print in different file formats. Available are – depending on the application – e.g. PDF, DOCX, PPT, XHTML, MHTML, HTML, Excel, RTF, XPS, TIFF, PNG, JPEG, Bitmap, EMF, TTY, CSV, Text, XML.

To do this, choose the relevant output medium in the Print Options dialog, which you reach via File > Export or via "Export" from the preview.

Please consider:

- Due to the format, the layout cannot always be taken over 1:1 because there are specific restrictions when converting to these formats.
- Printing issues is only supported for the PDF export.
- The Microsoft® Word export format creates DOCX files that are compatible with Microsoft® Office 2007 and higher. Tables will be exported on continuous pages to support later editing.
- RTF: A mix of different page formats is not supported.

Many formats have various possibilities for configuration. You can make use of these by clicking the "Options" button.

- With Excel formats, you can reduce the number of columns and rows to the minimum required by means of the "Only data from table object(s)" option. Also all pages can be exported into one sheet and the output formats 'xls' as well as 'xlsx' are available.
- The picture export to JPEG, TIFF and PNG supports optional automatic cropping of the results to the content. An exported barcode is therefore only exactly as large as required to display the complete content.
- With PDF exports, you will find e.g. the option for creating a file that is PDF/A compliant and security options. You will find more information about creating a PDF table of contents in "Report Sections " in chapter "Page Layout".

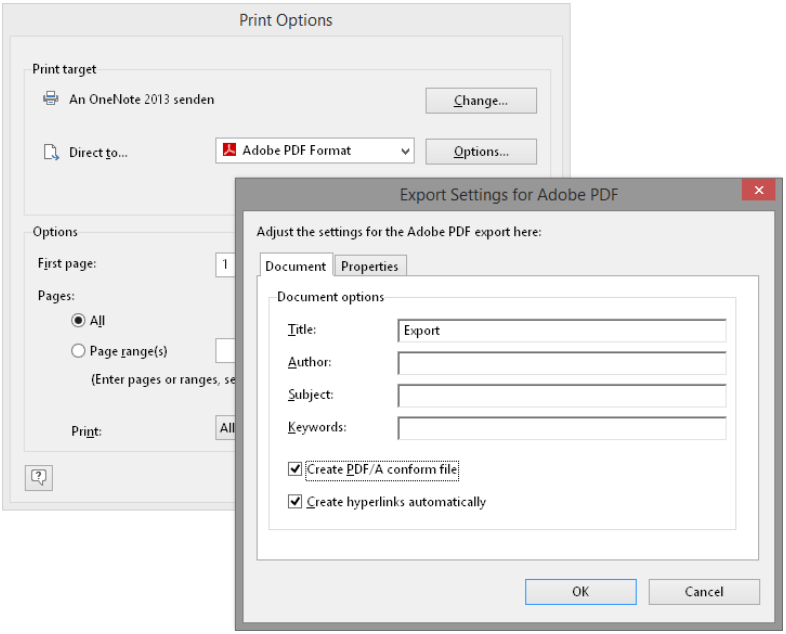


Figure 9.4: Output settings for PDF

When you start the print, choose the storage location in the following "Save As" dialog and enter a name for the file to be created in the "File name" field.

- By checking the option "Open the file in the registered application after the output", you can display the file after creation directly in the respective program (e.g. Excel).
- The option "Send exported files by email" lets you send the files directly by email.
- You can add a digital signature to your files by means of the "Digitally sign created files" option (not available in all applications).

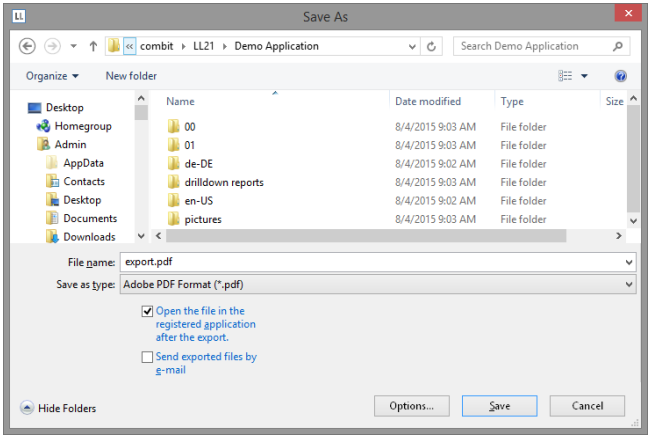


Figure 9.5: Output options

9.4 Test Print in the Designer

Choose **File > Print > Test Print** (File > Print Sample) to print the current project with sample data. In the print sample, fixed text appears as it is defined in the project; variables and fields however are replaced by a predefined sample text or by a single repeated sample data record.

9.5 Report Parameters

The report parameters allow for the parameterization of reports; i.e. the result of the output can be influenced. This allows e.g. a date range to be selected or only certain invoice numbers to be printed.

This functionality can also be used to create drill-down reports. For more information, see chapter "Drilldown Reports (Increase Detail Level)"

Parameters can be defined via **Project > Report Parameters.**

Tip: The availability of this chart depends on the application.

Example: Filtering a report according to category and date in the preview.

To do so, proceed as follows:

1. What we have is product statistics spanning multiple product groups and years:

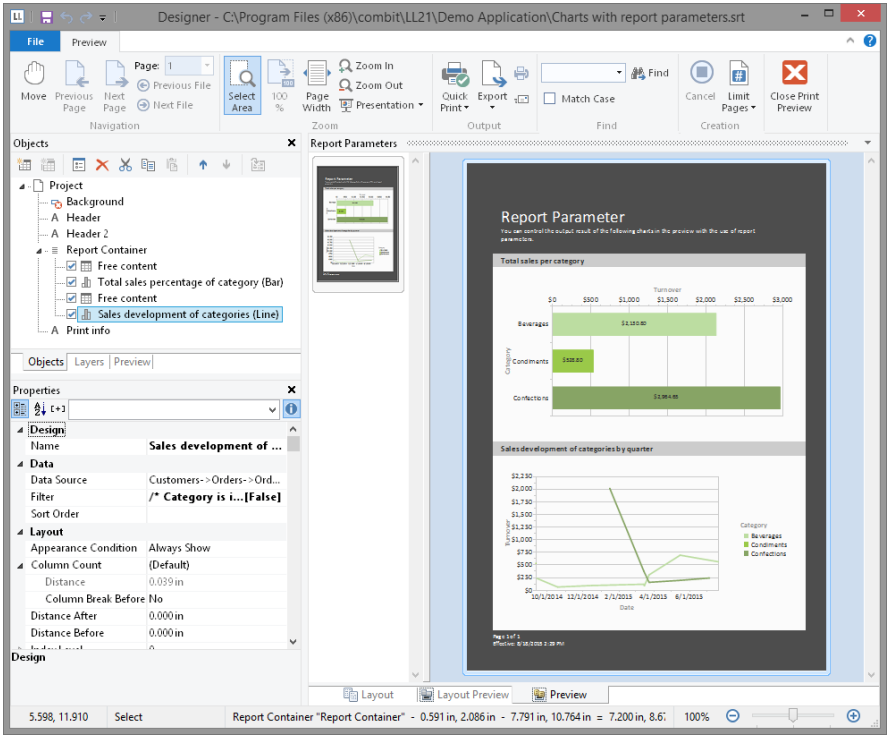


Figure 9.6: Sample-Report "Different chart types"

2. Now add the parameters at Project > Report Parameters. Give distinctive names, e.g. "Categories". The "@" character is automatically appended to the front of the name. For "Available Values", select "From Data Source" and the data source "Categories" with the field "CategoryID".

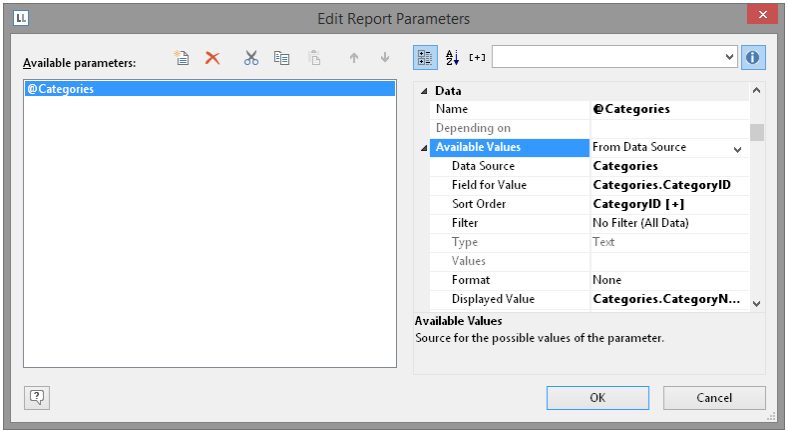


Figure 9.7: List of Report Parameters - From Data Source

3. For the remaining report parameters "StartDate" and "EndDate", select "Manual Input" for "Available Values". Choose "Date" for "Type" and "Control Type" and give them a distinctive name, e.g. "StartDate" and "EndDate".

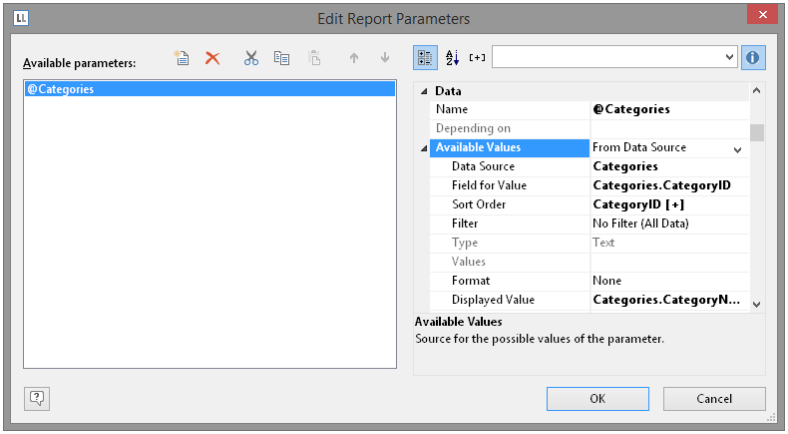


Figure 9.8: List of Report Parameters - Manual Input

4. The parameters are now available in the variable/field list.

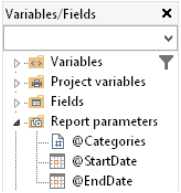


Figure 9.9: Parameters in the variable/field list.

5. Under the property "Filter" in the chart object, now define the corresponding formula for the constraints on the data.

   Pay attention to the notes in section "7.2 Filter".

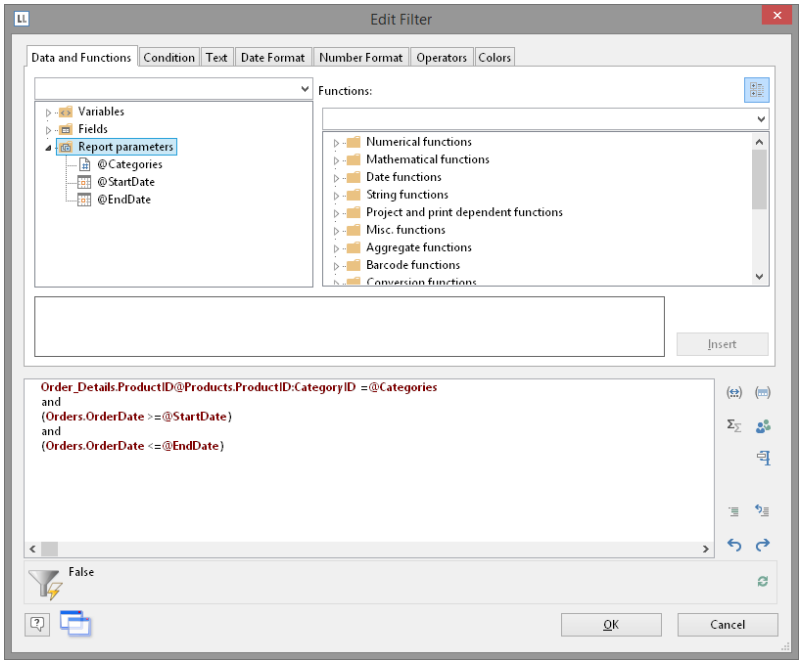


Figure 9.10: Report Parameters in the Variables-/Field-List and Formula for the Filter

6. When printing to preview, the parameters can then be configured as desired - the report will be filtered according to categories and date:

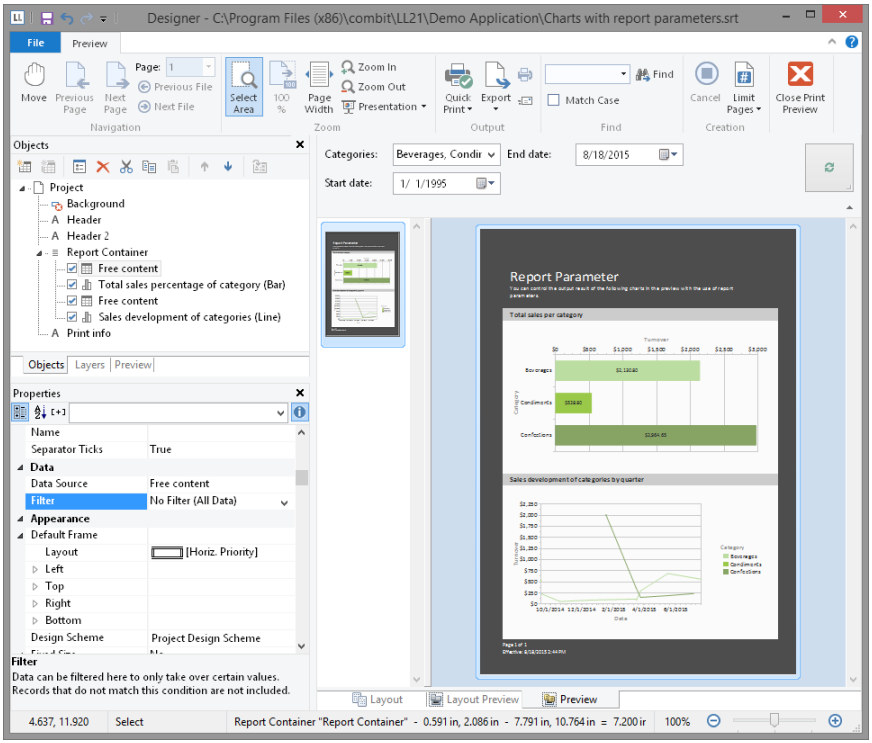


Figure 9.11: Filtered Report

7. If you are not printing to preview, but instead e.g. to a PDF file, the parameter selection will appear as a dialog before printing.

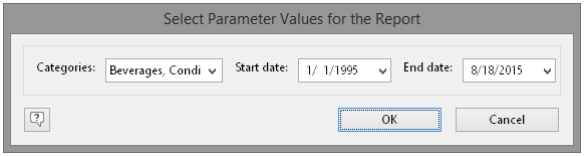


Figure 9.12: Report Parameter Selection in the export

8. You can now define yet another parameter — in the example above e.g. a "Products" parameter that is dependent on the selection in "Categories". Select the corresponding parameter via the property "Depending on".

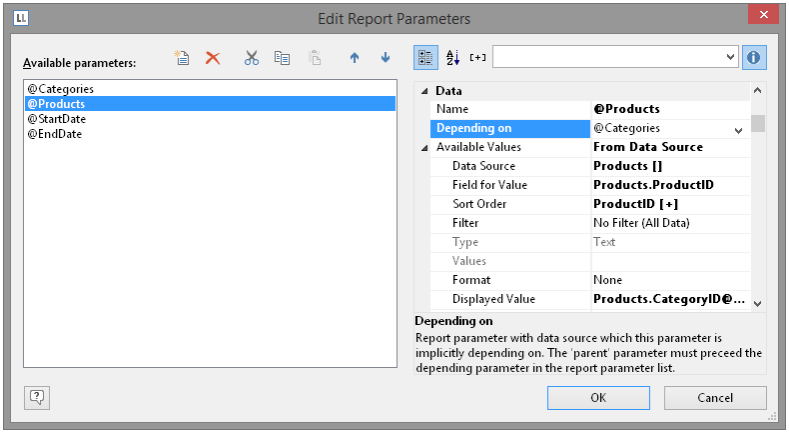


Figure 9.13: Definition of a dependent Report Parameter

9. After doing so, for the second parameter "Products", only those values that also match the selected first parameter will be available. In this example, it is only the beverages that are shown:

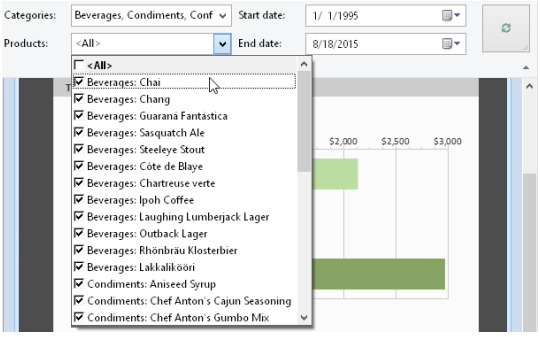


Figure 9.14: Dependent Report Parameter

10. Variables, Fields and Expressions

Information such as a return address line on an address label or a heading over a list can be entered directly into the project as "**fixed text**". Fixed text is printed exactly as it is held in the project.

Alternatively, this information can be taken over dynamically from a higher-level program. Such information is entered into the projects as "**variables**" or "**fields**".

Fields are the data that changes for each line of a table. Variables remain the same throughout the page. For example, you might choose the TELEPHONE field for the contents of a column of a table. The different telephone numbers for the data records in the database are printed in this column. In other words, variables and fields are placeholders.

With these two kinds of information, attractive projects can already be designed that are adequate for many purposes. However, the Designer offers much more. With the aid of formulas and expressions, the information held in variables and fixed text can be joined or modified in almost any conceivable way. The "**formulas**" and "**expressions**" make this possible. In formulas and expressions, fixed text and variables can be used in "**functions**" and joined by "**operators**".

For example, with projects for printing address labels, you can use an expression to automatically add the text "PO Box" to a PO Box number held in a variable called POBOX. In this way, not just the number alone will be printed on the label but something like "PO Box 111111" instead.

Or, consider this: The net price of an article is held in a variable called PRICE. However, you want to print the price including VAT in your list. A formula that calculates the VAT from the net price and then adds it on will help you here. The gross price will then be printed.

10.1 Variables-/Field-List

The variable list displays all variables available in the current project; for list type projects, all available fields are also displayed.

The hierarchical list differentiates between variables, fields, database tables, user variables and sum variables.

User-defined variables and fields can also be structured hierarchically. The contents of variables normally remain unchanged at least throughout a page; fields change from table row to table row.

If you want to assign variables or fields to existing objects, you can simply select the variables and fields that you want in the list and drag them to the object with the mouse (Drag & Drop). It inserts them automatically where possible. If you drag a variable to a free area on the workspace, a new text object will be created there. The size relates to the size of the last object whose size was changed.

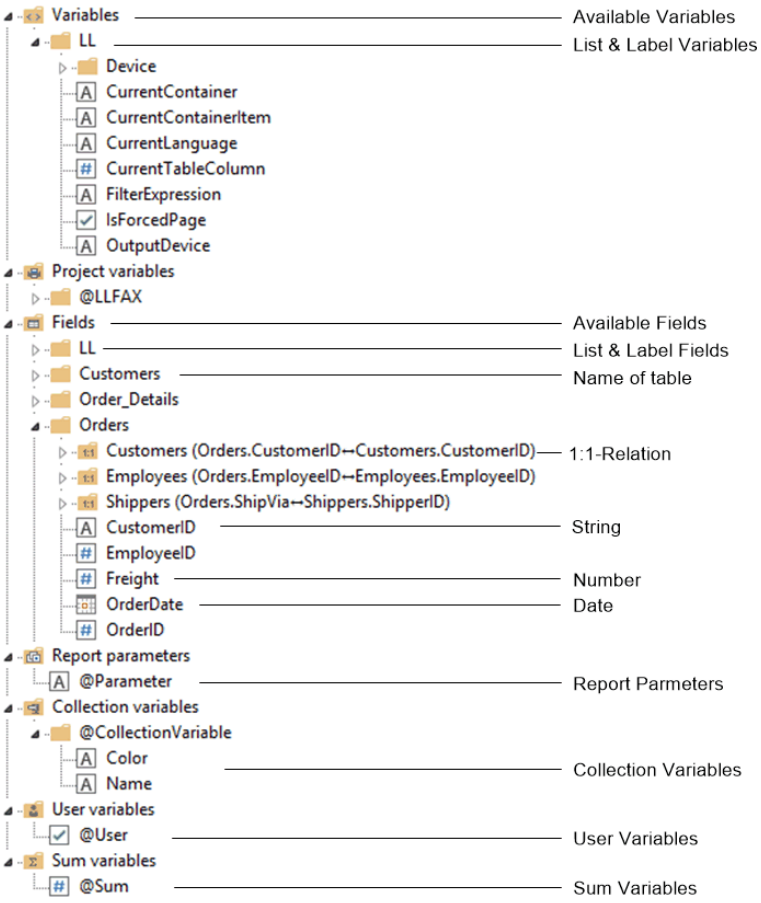


Figure 10.1: Variable list

10.2 The Elements of an Expression

Fixed text, variables, formulae, functions, operators and the like – generally referred to below as "Elements of expressions" – are all inserted and combined by means of a common dialog.

The formula wizard helps you with your entries in several ways:

- Function syntax display: A tooltip appears describing the chosen function; it lists the required parameters and shows the result type.

- Auto complete: When you type a letter, the available functions, fields and variables are listed that begin with this letter. Within functions, suitable values are suggested for parameters.
- Syntax coloring: Functions, parameters, operators and comments are shown in different colors.
- Automatic type conversion: Variable and field types are converted automatically when inserted in existing expressions to ensure that the data type corresponds to that expected.

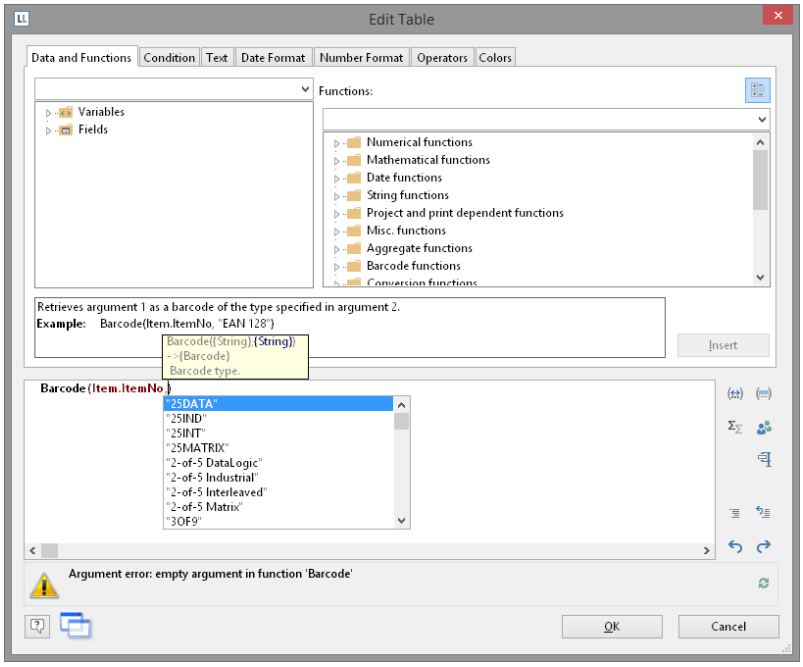


Figure 10.2: Autocomplete in the formula wizard

10.2.1 Different Expression Modes

Please note that there are two ways of writing expressions. Which mode is being used is set by the application.

On the one hand, there is the **normal expression mode**, in which you can enter names of variables/fields and functions without brackets. Fixed text must be enclosed in quotation marks. The individual variables/fields must be joined with the "+" operator.

On the other hand, there is the **extended mode**, in which you can enter fixed text without quotation marks. You must enclose variables with "<" and ">" and functions with chevrons ("«" and "»").

In this mode, you can insert the chevrons by clicking the "Insert chevrons" button (e.g. if you want to enter a function directly". You can also use ALT+174/175. It is not necessary to use an operator to join individual operators in this mode. The extended mode is easier to use.

Figure 10.3: Extended mode

10.2.2 The Tabs

This dialog consists of a series of tabs, each containing different elements to be edited.

Tab	Contains the elements
Data and Functions	The variables and functions available for this object type
Condition	Special dialog for defining IF-THEN-ELSE conditions
Text	Dialog for entering fixed text and options for setting tab stops (only text objects)
Date Format	Available date formats
Number Format	Available number formats
Operators	Available logical operators
Colors	Available colors.

You will find an "Insert" button on each of these tabs with which you can add the selected element to the editing line. A double-click on the relevant element has the same effect. In addition, you can also add the elements to the editing line with Drag & Drop (also in and from the function list).

For the different elements of an expression (variables, text, functions etc.), certain rules apply for the way of writing and for joining individual elements to give an expression. A wizard integrated in the dialog makes sure that these rules are observed. For this reason, you should always add the different elements to the editing line by means of the respective tab in this dialog. Thus, you should use the "Data and Functions" tab to enter variables and the "Text" tab to enter text etc.

Experienced users can also enter the expression that they want directly in the edit box or modify the text that is there (e.g. put something in brackets).

10.2.3 The Editing Line

The editing line contains the expression that you have compiled by means of the various tabs, entered directly or created with Drag & Drop.

The expression is checked continuously as you create it to make sure that the syntax is correct. Any syntax errors are shown in the information pane under the editing line, together with an explanation of the cause of the error. The syntax checker will normally produce an error until the expression is complete. Don't let this worry you. When the expression is complete, the resulting text should be shown with the Designer's sample data.

To make complex expressions clearer, you can split them across several lines with RETURN. This has no effect on the result.

With the different buttons on the right next to the input field you can

- mark brackets belonging to the formula expression.
- mark the expression between matching brackets.
- edit sum, user and collection variables.
- Comment out or uncomment the selection
- undo the last operation.
- redo the last undo operation.

10.2.4 Inserting Data

There are different data types for variables and fields: "string", "number", "date", "Boolean" (logical values), "picture" and "barcode". The data type is important if you want to use data as parameters in functions as they normally only accept certain data types. Thus you can only multiply a numeric value with a numeric value.

The "Data and Functions" tab includes an overview of all available variables and fields, an icon indicating the data type in front of the variable as well as the available functions.

You can filter the data by means of the input field above the data list.

To add a variable or field, double-click the data that you want, use the "Insert" button or drag the variable/field to the editing line (also via the function list). The variable/field in question will be added to the editing line in the correct syntax.

Repeat the above steps to add more variables/fields to your expression. If you want to have spaces between the individual variables, e.g. to separate FIRST_NAME and NAME, make sure that you enter this space in the editing line.

> You can also insert variables by "dragging" the one you want to the target object in the workspace with Drag & Drop. The variable is then automatically added to the object as a new line.

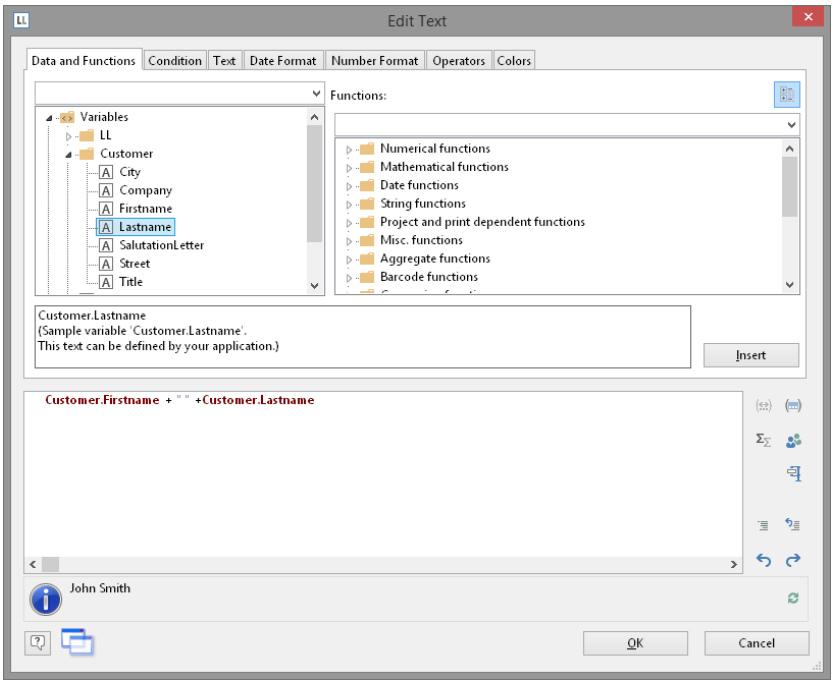


Figure 10.4: Joining variables and free text

10.2.5 Insert Fixed Text

Another important element in expressions is fixed text, with which you can prefix a variable with an identifier, e.g. "Telephone: 1234567".

With the "Text" tab, you can insert free text in your expression, set tab stops and page breaks.

Enter the text that you want and click "Insert" to add your entry to the editing line. The text will be placed automatically in quotation marks.

In the below example, the fixed text "Name" is first inserted via the "Text" tab followed by the variables "Customer.Firstname" and "Customer.Lastname" by means of the "Data and Functions" tab. The "Name:" text will then be printed first followed by title, first name and last name from the database.

Please consider that spaces that are to appear between variables or between variables and text, e.g. as separators, also count as "fixed text".

Depending on the mode, variables and fixed text cannot be simply placed together but must be joined by the "+" joining operator. In this example, the fixed text "Name" is joined to the "Customer.Firstname" variable with the "+" operator.

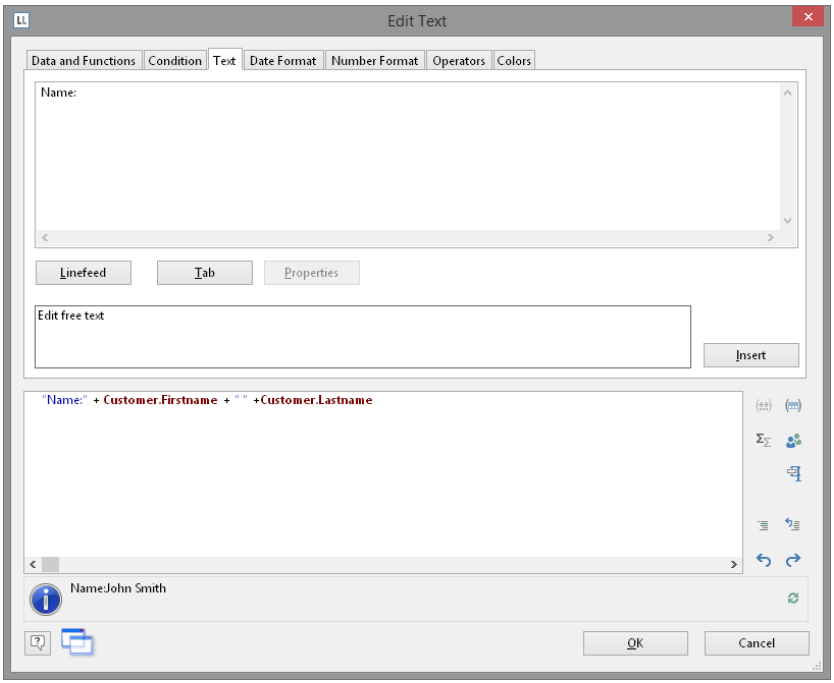


Figure 10.5: Fixed text in the formula wizard

Inserting Linefeed

With the "Linefeed" button, you insert a line break ("¶") into your text line.

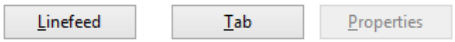


Figure 10.6: Insert line break by clicking the button

However, such a break only has an effect if you have specified that breaks are allowed for the object in question (line of a text object or column of a table object). In this case, the words that don't fit in the line/column are continued on a new line causing the lines below to be moved down by one line. (Caution: If the text contains just one long word, it will not be broken but will be truncated instead).

With text objects, the value of the "Line Wrap" property in the property list for the respective paragraph must be "Wrap".

With table objects, the value of the "Fit" property in the property list for the respective column must be "Wrap".

Inserting Tab Stops

Tab stops are only allowed in text objects. Therefore this button is not displayed in table objects.

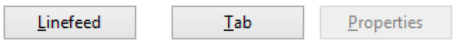


Figure 10.7: Insert tab stop by clicking the button

Since a tab stop is also a character, it must also be enclosed in quotation marks. Alternatively, in this example, you can insert the tab stop with "Insert" to the existing "Invoice date" text.

You create a tab stop with the "Tab" button and you define the position (in mm) and alignment with the "Properties" button.

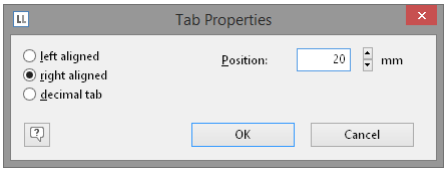


Figure 10.8: Tab properties

Only *one* tab stop can be inserted on each line. A tab stop causes the preceding text to run only as far as the tab stop. A tab stop that is right aligned will cause the text that follows it to be justified to the right. The distance from the left margin determines the position of the tab stop.

10.2.6 Inserting Comments

You can add comments to formulas provided that this is supported by the application. You can do this in two ways:

- "/* <text> */" for comments in the middle of a formula
- "/* <text>" for comments at the end of the formula. With this variation, all the remainder of the formula becomes a comment – not just the line.

With the respective buttons to the right of the input field, you can directly comment out or uncomment a selection.

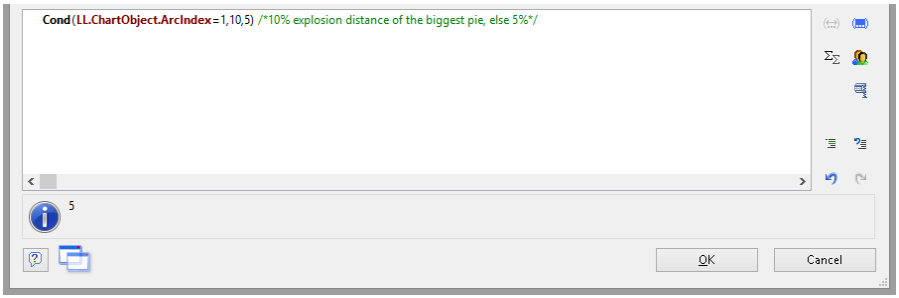


Figure 10.9: Inserting comments

10.3 Working With Functions

Functions open up countless possibilities and make defining expressions really interesting. With the aid of these functions, you can calculate values, influence the results of variables or their appearance, convert value types and perform many more tasks.

10.3.1 Notation of Functions

Functions all use the same notation which is based on the BASIC programming language:

return value = function(arguments)

You only specify the function and the arguments. Whether you use capitals or small letters is irrelevant for the names of the functions, but not for the arguments. Capitals or small letters are especially important when variables are used as arguments.

It evaluates the expression and interprets it replacing the "function(arguments)" part by the "return value".

I.e., the *return value.* is produced from the **function(arguments)** input line.

The elements have the following meanings:

Element	Meaning
Function()	The name of the respective function in its correct syntax. The brackets () for the arguments belong to the function name. The brackets must always be present even if a function does not have any arguments.
Arguments	The values that a function uses in order to produce the return value. The arguments follow the name of the function immediately without any spaces in between. A function can have zero, one or more than one argument(s). Functions usually expect arguments of a certain value type (see below). It is important that the value types of the arguments conform to the types expected by the function.
Return value	The result of a function. The type of the return value depends on the function in question or the value types of the arguments.

10.3.2 Value Types

Value type	Explanation
Boolean	The logical values "True" or "False". If the condition is met, the result is true otherwise false.
String	Any string. This string can contain letters, digits and special characters. It must be placed in quotation marks ("") so that it can be differentiated from names of variables.
Date	Date values according to the Julian calendar.
Number	A string containing only the digits 0 - 9, the decimal point and the minus

	sign, other characters are not permitted. Number strings do not have to be enclosed in quotation marks.
Barcode	A string that is made up of the characters used for barcodes.
Picture	One of the supported picture formats.
RTF	Formatted text

10.3.3 Overview of the Functions

You will find an overview of the available functions on the "Data and Functions" tab. You will also see an explanation of the currently selected function. The explanation informs you of the nature of the function and the type of the arguments that it expects (parameters).

If no arguments are given for a function, this means that the function does not expect any (apart from the empty brackets). Otherwise, the function expects exactly the number of arguments as shown. Arguments that appear in square brackets ([ ]) are optional, i.e. they can be omitted.

The argument "All" means that the argument can be any of the following types (Boolean, string, date, number, picture, barcode, RTF).

You will find a more detailed explanation of all functions and parameters under "Overview of Properties".

The functions available on the "Data and Functions" tab are sorted alphabetically or shown by function group. There are the following function groups:

- Numerical functions
- Mathematic functions
- Date functions
- Character functions
- Miscellaneous functions
- Aggregate functions
- Barcode functions
- Conversion functions
- Binary functions
- Drawing functions
- Project and print-dependent functions
- Logical functions
- Currency functions

You can filter the functions by means of the input field above the list of functions.

When you select a function, you are shown a short explanation in the information pane at the bottom. To add the function to the editing line, double-click the function that you want or use the "Insert" button.

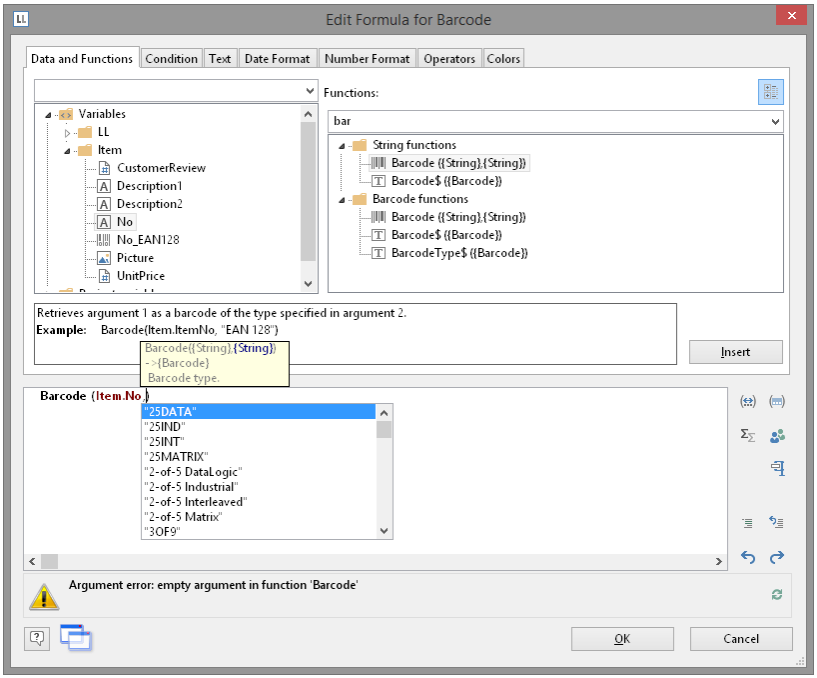


Figure 10.10: List of functions with help text and tooltip

10.3.4 Using Functions

Examples of some selected functions are explained below.

Convert a Number to a String With Str$()

The Str$ function converts a number to a string.

The (optional) second parameter specifies the length of the string. However, if this number is too large for this format, the resulting string may be longer than you want. If the number is too small, the result will be padded with spaces, according to the sign, on the right (negative) or the left (positive).

The (optional) third parameter specifies the number of decimal places. If it is positive, the number is shown as a floating point number or in scientific notation if it is negative. If the third parameter is not specified, the number of decimal places is set to 0 with integers and, for reasons of compatibility, to 5 with floating decimal values.

Examples:

Str$ (Constant.Pi())	Result: "3.14159"
Str$ (Constant.Pi(),0,3)	Result: "3.141"
Str$ (Constant.Pi(),6,3)	Result: " 3.141"
Str$ (-Constant.Pi(),12,-3)	Result: "-3.141e+00"

To enter the expressions, proceed as follows:

1. Locate the function in the alphabetical list or filter the functions by entering Str$ in the filter field above the list.
2. Double-click the "Str$ ()" function to add it to the editing line. This also adds placeholders for the parameters that are expected or accepted by the function. The first of these parameters is selected automatically and you will be prompted to replace this placeholder with a valid value. It's a good idea to first replace all the function's parameters with the respective values before you go on to define the expression.

   Functions are also accepted as values for most parameters. The Designer takes care of the correct syntax provided that you also use the "Functions" tab for entering them.
3. The "Constant.Pi()" function was inserted here as a parameter {number}.
4. To insert a variable and a function at the same time, use the mouse to drag the variable that you want to the relevant function folder (e.g. "Numerical functions"). The folder opens up automatically and you can select the function that you want with the mouse. If you move the mouse upwards or downwards, the list scrolls automatically in the corresponding direction. If you "drop" the variable onto a function, the function will be inserted with the selected variable as the first parameter.

Convert a String to a Number With Val().

The Val() function converts a string to a number. If there is an error, the result will be 0. The decimal point character must always be given as "."

Example:

Val ("3.141")	Result: 3.14

The "LocVal()" functions converts a string to a number and presents the result in a format that is valid for the country.

Examples:

LocVal ("12.00","de-de")	Result: 12,00
LocVal ("12.00","en-us")	Result: 1200,00

Convert a String to a Date With Date()

The Date() function converts a string to a date. When doing so, the separator is evaluated accordingly:

Example:

Date ("04.07.1776") Result: 04.07.1776

Convert a String to a Barcode With Barcode()

The Barcode() function converts a string to a barcode. This function can only be used in a table or barcode object.

For the second parameter, the wizard offers you the possible barcode types as autocomplete options. Some barcodes have special formats which must be adhered to. You will find detailed information about this in chapter "Barcode Objects".

Example:

Barcode ("Hello World","GS1 128")

Convert a String to a Picture With Drawing()

The "Drawing()" function converts a string to an image file.

Example:

Drawing("sunshine.gif")

Truncate Strings

The "Left$()" function shortens a string from the left by a specified number of characters. The "Right$()" function shortens a string from the right and the "Mid$()" function cuts out part of the string.

The second parameter specifies the maximum number of places in the result.

Examples:

Left$ ("combit", 1)	Result: "c"
Mid$("combit",1,2)	Result: "om"
Right$("combit",3)	Result: "bit"

The "StrPos()" and "StrRPos()" functions return the position of the n^{th} occurrence of a search string in a string. You can supply a third parameter specifying which occurrence of the search string is to be returned. The first character of the string corresponds to position 0. This means that with this function, you can extract a substring from the string, e.g. from the first space onwards.

Example:

Left$ ("John Smith",StrPos("John Smith"," ")) Result: "John"

The "Rtrim$()" function removes spaces at the end of a string, the "Atrim$()" function removes them from the beginning *and* the end of a string.

Example:

RTrim$ ("Hello World ") Result: "Hello World"

Formatting a Data Value With Date$()

You can format date values with the Date$() function. To avoid having to enter the formatting parameters yourself, you can select the parameters from a list on the "Date Format" tab.

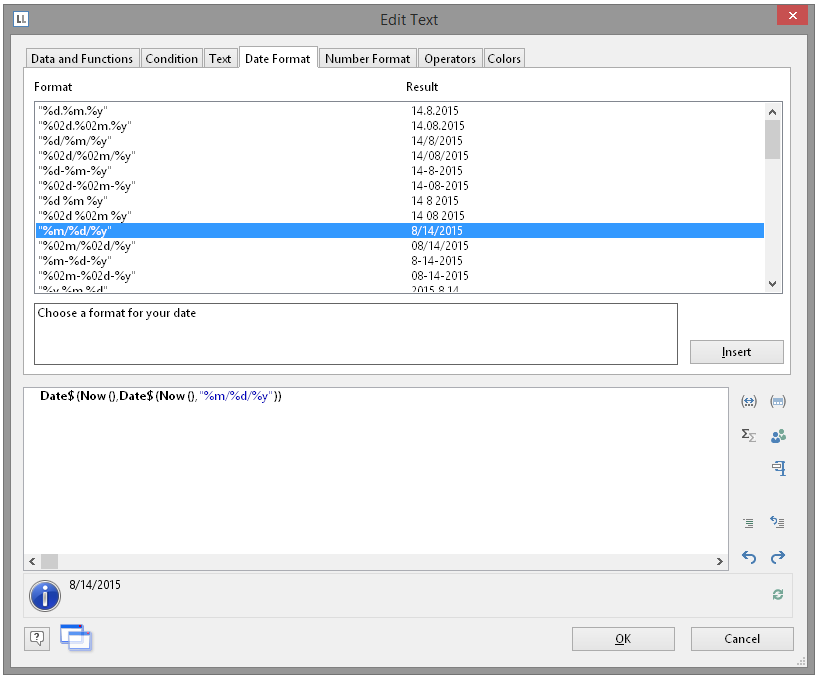


Figure 10.11: Example with Date$()

In this way, for example, you can specify whether days or months are to be written in words or whether the year is to be output with two or four digits etc. You should generally proceed by first selecting the date format that you want from the "Date Format" tab and then insert the value to be formatted or the expression as a parameter.

In the format list, you will see the respective formatting instructions on the left and the respective result on the right.

The "Now()" function, which returns the current date, is selected automatically as the date value. But if you want to format a different date value, simply replace "Now()" with the value that you want. You will find more information about the "Date$ ()" function under "Overview of Functions".

Formatting a Number Value With Fstr$()

You can format numerical values with the Fstr$() function. To avoid having to enter the formatting parameters yourself, you can select the parameters from a list on the "Number Format" tab.

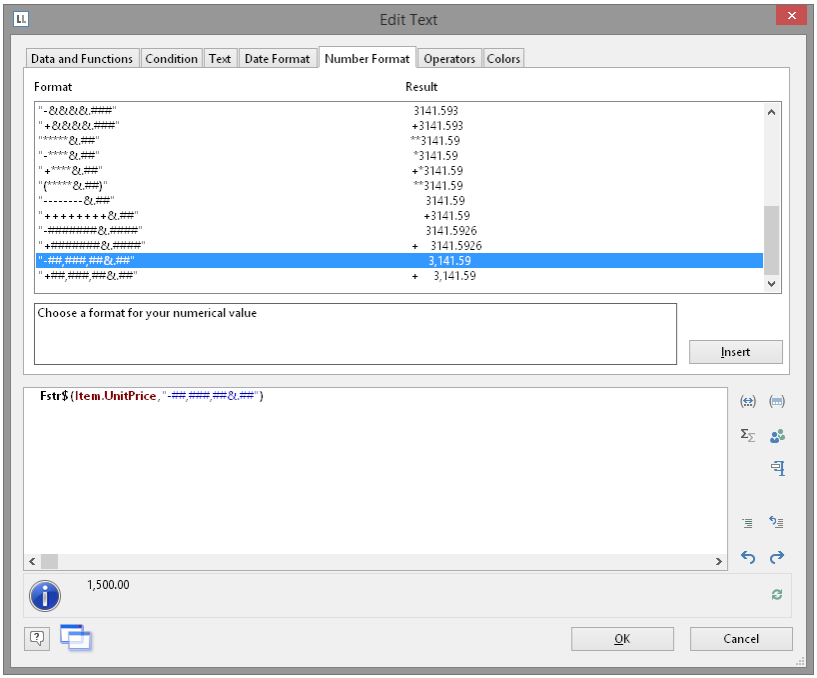


Figure 10.12: Example with Fstr$()

In this way you can specify the number of positions before and after the decimal point, leading zeros and similar. You should generally proceed by first selecting the number format that you want from the "Number Format" tab and then insert the value to be formatted or the expression as a parameter. With complex expressions containing calculations, make sure that you format the result and not a value in the calculation formula. Otherwise you will not be able to perform the calculation.

In the format list, you will see the respective formatting instructions on the left and the respective result on the right. You can add the number format that you want to the editing line by double-clicking or with "Insert".

Insert the number value to be formatted as a parameter. You will find more information about the "FStr$ ()" function under "Overview of Functions".

Formatting Currencies With LocCurrL$() or LocCurr$()

The "LocCurrL$()" function returns a string with the currency format and symbol that is valid for the country. Insert the number value to be formatted as a parameter. The

(optional) second parameter is the ISO 3166-Country code for the country whose currency format is to be used.

Example:

LocCurrL$ (1000) Result: "$1,000.00 "

The "LocCurr$()" function returns a string with the currency format that is valid for the country but without the currency symbol.

Example:

LocCurr$ (1000) Result: "1,000.00"

You will find more information about this function under "Overview of Functions".

Page Numbers With Page$() or Page()

The "Page$()" function returns the page number of the page being printed as a string.

Example:

"Page " + Page$ () + "/" + TotalPages$ () Result: Page 1/3

The "Page()" function returns the page number of the page being printed as a number, thus giving you the opportunity of using an expression or a formula, e.g. in conditions.

Example:

Cond(Page()>1, "Page " + Page$())

Counting Values With Count()

The "Count()" function counts the number of values of the first argument.

The first parameter specifies the values to be counted. The (optional) second parameter specifies whether the values used for the calculation are to be deleted after outputting.

Examples:

Count (Order_Details.ProductID)

Count (1)

Only Count Certain Values With CountIf()

The "CountIf()" function counts the number of values that satisfy the condition. You should also use the "Distinct()" function if multiple occurrences of values are only to be counted once.

The first parameter specifies the expression for the compare. The (optional) second parameter specifies whether the values used for the calculation are to be deleted after outputting (default: True).

Examples:

CountIf (Customers.Region="US")

CountIf (Distinct(Customers.Region="US")) multiple occurrences of values are only counted once

CountIf (IsNull (Orders.OrderDate)) counts all values whose content is empty

Totaling With Sum()

The "Sum()" function adds up the values of the first argument.

The (optional) second parameter specifies whether the values used for the calculation are to be deleted after outputting (default: True).

Example:

Sum (Order_Details.UnitPrice)

Obtaining User Input via a Dialog With AskString$()

You can use the "AskString$()" function to obtain information from the user during the print process. A dialog appears when printing in which the user is required to enter the information that you need.

The first parameter contains the text for the request that is to appear in the dialog.

With the second parameter, you can specify whether the user request is only to appear once when printing starts (default: False), or whether the information is to be requested for each individual data record (True).

The third parameter contains the string that you want to display as a recommended value in the dialog's input field.

The last parameter specifies the maximum number of characters that the user may enter. Example:

AskString$ ("Insert Subject",False,"Your request from " + Date$(Now()))

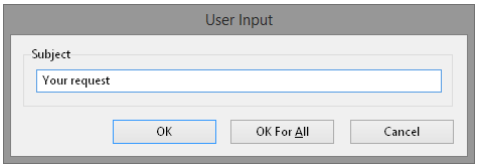


Figure 10.13: Input dialog with AskString$()

Appearance Conditions With Lastpage()

The "Lastpage()" Boolean function returns whether the actual page is the last page, i.e. the result of this function is "True" or "False".

This function can only be used in footer lines of tables, as a condition in a layout region condition, or in objects linked to a table. In all other cases, Lastpage() is always "False".

Logical Conditions With Cond()

The "Cond()" and "If()" functions let you formulate a wide variety of conditions. The first argument is a logical expression that is evaluated for truth. If the expression is true, the second argument is returned as the result. If the expression is false, the third argument is returned as the result.

A simple example: Let us assume that you want to output the total of the article prices on a page in an invoice footer line. You also want to output the grand total of article prices on the last page.

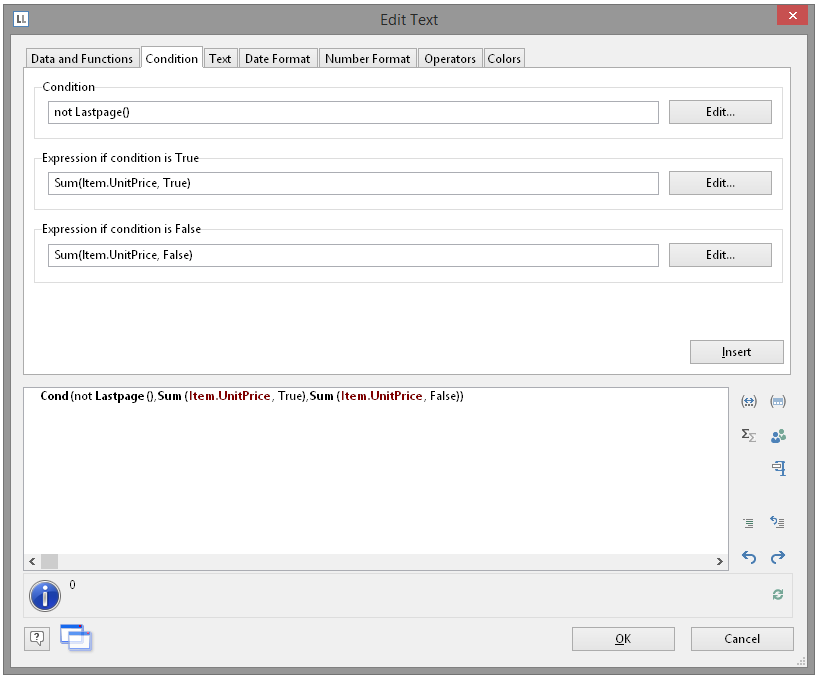


Figure 10.14: Example of the use of Cond()

You enter this function in the formula wizard either directly in the editing line or via the "Condition" tab.

1. As a "condition" (1st parameter), enter the expression that is to be tested for TRUE or FALSE. In our example, we want to use the "not Lastpage()" function to determine whether this is the last page.
2. As the "expression, if condition is TRUE" (2nd parameter), enter the expression that is to apply if the above condition is TRUE. In our example, the condition is true if this is not the last page and in this case the page total is to be output (parameter of the "Sum()" function is "True").
3. As the "expression, if condition is FALSE" (3rd parameter), enter the expression that is to apply if the above condition is FALSE. In our example, the condition is false if this is the last page and in this case the grand total is to be output (parameter of the "Sum()" function is "False").
4. If you have entered this function via the "Condition" tab, you can use the "Insert" button to add the finished condition to your editing line.

Working With Null Values

There are various functions for working with Null values (undefined field contents).

If there are Null values in an expression, the entire expression can become Null. To prevent this, use the "NullSafe()" function for fields that could be empty (e.g. salutation or title). This function checks to see whether the field value is Null and returns a substitute value if this is the case; otherwise, it returns the result of the expression.

Example:

```
Cond (Empty(COMPANY),NullSafe(FIRSTNAME)+ " " + NAME)
```

With the "IsNull()" or IsNullOrEmpty() function, you can check whether the value passed to the function or the result of the expression is Null, i.e. an empty field.

Example:

```
Cond (IsNullOrEmpty(COMPANY),FIRSTNAME + " " + NAME)
```

You can set a Null value with the "Null()" function.

10.4 Working With Operators

Open the list of available operators by clicking the "Operators" tab. The operators are used to join variables and free text to give more complex conditions and to perform compares or calculations.

On the "Operators" tab, you will find the respective operators in the column on the extreme left; the syntax is shown in the middle column and the value types with which the respective operator can be used in the right column.

Operators join two or more values or variables to give a new value. In this way, you can formulate arithmetic expressions (basic arithmetic operations) or logical expressions. The value type of the result of an expression depends on the value type of the individual elements of the expression.

The "+" operator has a special meaning. It is not only used for additions ("Number" and "Date" (value types) but also for joining strings and fixed text ("string" value type).

You can combine multiple operations in one expression. The normal rules of precedence apply in this case: Logical operators are evaluated before arithmetic operators which are evaluated before relational operators. You must use brackets if you want a different processing order. The "innermost" brackets are evaluated first.

The general processing hierarchy is

Priority	Operator
1	brackets ()
2	Functions

3	logical operators
4	arithmetic operators
5	relational operators

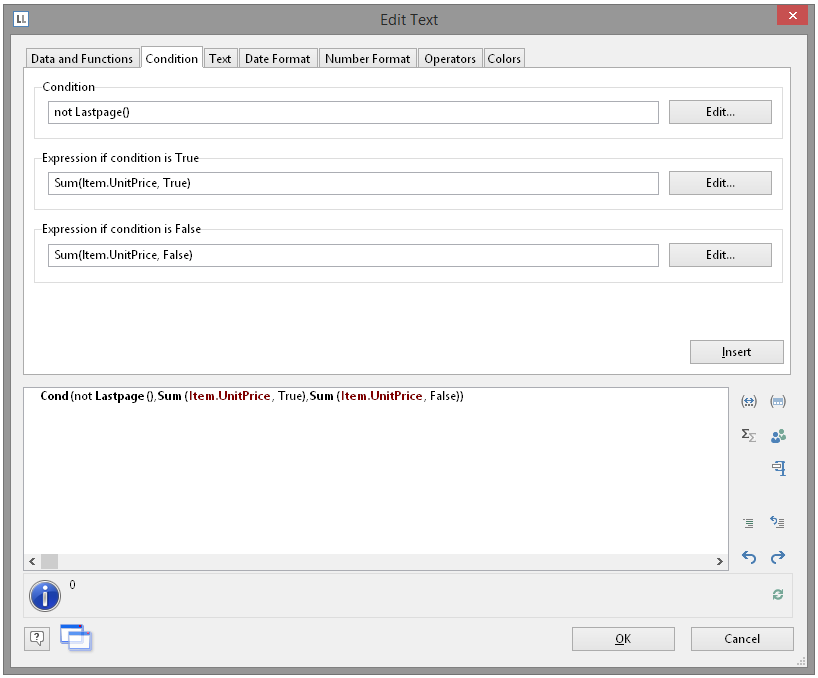


Figure 10.15: Example of multiplying two fields

10.4.1 Arithmetic Operators

The familiar rules of precedence – multiplication and division before addition and subtraction — apply for arithmetic operators. The "Modulo" operator is evaluated first followed by multiplication/division ("*" and "/") and finally addition and subtraction ("+" and "-"). Example: NET_PRICE+(NET_PRICE*0.19)

Operator	Meaning	Data types
+	Addition	string, date, number
-	Subtraction	date, number
*	multiplication	number
/	Division	number
%	modulo (remainder with division)	number

10.4.2 Relational Operators

Relational operators consist of two values of the same data type which are compared with one another returning a true/false value. The result (return value) is the Boolean value true or false. Example: Page()<>1

Operator	Meaning	Data types
>	Greater	string, number, date
>=	greater or equal	string, number, date
<	less than	string, number, date
<=	less than or equal	string, number, date
=	Equal	string, number, date
==	Equal	string, number, date
<>	not equal	string, number, date
!=	not equal	string, number, date

10.4.3 Logical Operators

A logical operator is a function that returns a true/false value. The result (return value) is the Boolean value true or false.

Depending on the type of logical operator, the compound expression is true if both joined expressions are true (AND conjunction) or if at least one of the joined expressions is true (OR conjunction).

The rules of precedence are: Negations are evaluated first, then the "logical AND" and finally the "logical OR".

Example: Zip code >=70000 AND zip code <=80000

Operator	Meaning	Data type
NOT or .NOT.	negation	Boolean
AND or .AND.	logical AND	Boolean
OR or .OR.	logical OR	Boolean
XOR or .XOR.	logical exclusive OR	Boolean

10.4.4 Formula Errors

The tool window "Formula errors" is opened automatically if errors are found when the project is opened.

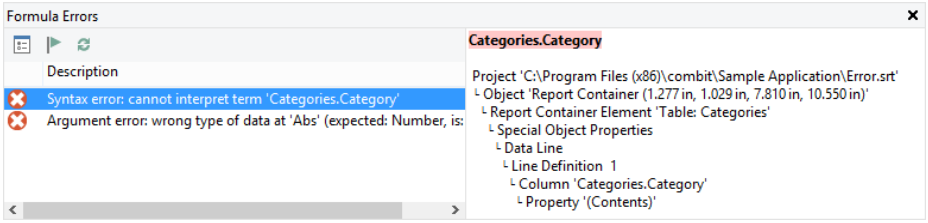


Figure 10.16: Formula Errors window

The syntax and argument errors are listed in the section on the left. When an error is selected, its location is shown in a tree diagram. Double-click on an error to open the properties dialog and select the corresponding location. Double-clicks work for all locations at which you can create a formula, i.e. for columns, paragraphs, properties, sum variables etc.

When an error has been rectified, you can mark it as complete with the corresponding button or click on the "Refresh list" button to regenerate the list of errors.

11. Overview of LL Variables and LL Fields

There are several variables and fields automatically – depending on the application. You will find the variables and fields in the "LL" sub-folders in the variable list.

11.1 Overview of Variables

Name	Explanation
LL.Color.*	Color value of the corresponding color.
LL.Device.Name	Identification of the output device (printer).
LL.Device.Page.Name	Designation of the selected paper size (example "A4").
LL.Device.Page.Size.cx	Physical page width of the output device in the project's unit of measure. Can be used in formulas to adjust the size of objects dynamically to fit larger output formats. Example: In the property list, set the Position.Left property to the value 0 and the Position.Right property to LL.Device.Page.Size.cx. The object will now always occupy the total page width.
LL.Device.Page.Size.cy	Physical page height in the project's unit of measure.
LL.Device.PrintableArea.Offset.cx	Width of the unprintable left margin in the project's unit of measure. Example: In the property list, set the Position.Left property to the value LL.Device.PrintableArea.Offset.cx. The object will now always be positioned precisely at the left margin of the printer's printable area.
LL.Device.PrintableArea.Offset.cy	Height of the unprintable top margin in the project's unit of measure.
LL.Device.PrintableArea.Size.cx	Printable page width in the project's unit of measure.
LL.Device.PrintableArea.Size.cy	Printable page height in the project's unit of measure.
LL.Scheme.*	Color value of the respective Design Scheme color.
LL.CountData (not with multiple tables)	Number of data records transferred by the program. This number also includes the data records that were not printed because of their filter condition. This counter is incremented for each data record.
LL.CountDataThisPage (not with multiple tables)	Number of data records transferred by the program on the current page. This number also includes the data records that were not printed because of their filter condition. This counter is incremented for each data record.

LL.CountPrintedData (not with multiple tables)	Number of records actually printed.
LL.CountPrintedDataThisPage (not with multiple tables)	Number of data records actually printed on the current page.
LL.CurrentContainer	Description of the current report container
LL.CurrentContainerItem	Value of an element's "Name" property in the report container. Is used e.g. for display and layout region conditions.
LL.CurrentLanguage	Returns the print language, e.g. "en-EN"
LL.CurrentTableColumn	Returns the index of the current column in the case of multi-column projects.
LL.FilterExpression	Selected project filter.
LL.IsForcedPage	Specifies whether the page was forced due to the "Minimum page count" project property.
LL.OutputDevice	Output medium. Can be used e.g. for formatting objects for output in a particular way (e.g. "HTML", "RTF", "PDF" etc. Format — Value PDF — PDF HTML — HTML RTF — RTF MS Word — DOCX PowerPoint — PPTX SVG — SVG Bitmap — PICTURE_BMP EMF — PICTURE_EMF TIFF — PICTURE_TIFF Multi-TIFF — PICTURE_MULTITIFF JPEG — PICTURE_JPEG PNG — PICTURE_PNG MS Excel — XLS XPS — XPS MHTML — MHTML XHTML/CSS — XHTML XML — XML Text — TXT Pinwriter — TTY Preview — PRV Printer — PRN File — FILE Presentation — PRES JQuery Mobile — JQM
LL.SortStrategy	Sort order selected by the user. This function is

	deprecated and should no longer be used.
ReportSection.Description	Returns the name of the section of the report: index or table of contents
ReportSection.Maximum DirectoryDepth (only table of contents)	Value of the property "max. Contents depth" in the project options.
ReportSection.PageRelativ (only index)	Relative number of pages for the index: the page numbers start at 1.
@LLFAX.RecipName	Fax dispatch: Recipient name
@LLFAX.RecipNumber	Fax dispatch: Recipient's fax number
@LLFAX.SenderBillingCode	Fax dispatch: Sender's billing code
@LLFAX.SenderCompany	Fax dispatch: Sender company
@LLFAX.SenderDept	Fax dispatch: Sender department
@LLFAX.SenderName	Fax dispatch: Sender's name

11.2 Overview of Fields

Name	Explanation
LL.ChartObject.ArcIndex (only with pie charts)	Index of the segment. The segments are sorted by size. The largest segment has index 1.
LL.ChartObject.ArcPerc (only with pie charts)	Size of the segment in percent.
LL.ChartObject.ArcTotal (only with pie charts)	Absolute value of the entire data volume.
LL.ChartObject.ArcTypeIsOthers (only with pie charts)	True, if the current segment is the "other" segment.
LL.ChartObject.ArcValue (only with pie charts)	Absolute value of the current segment.
LL.ChartObject.AxisCoordinate (only with charts)	Coordinate value (can be used in axis labels).
LL.ChartObject.AxisPercentage (only with charts)	Coordinate value in percent (can be used in axis labels).
LL.ChartObject.ValueIsOthers (only with rel. stacked bar charts)	True, if the current bar is the "other' bar.
LL.ChartObject.Shape.Attribute	Shapefile Attributes
LL.CurrentRelation (only with multiple tables)	Description of the current relationship to the higher-level table.

LL.CurrentSortOrder (only with multiple tables)	Description of the current sort order in the table.
LL.CurrentTable (only with multiple tables)	Identification of the table currently in use.
LL.CurrentTablePath (only with multiple tables)	Identification of the table currently in use (hierarchically with higher-level tables), e.g. Customers.Orders.Order_Details.
LL.FCountData	Number of data records transferred by the program. This number also includes the data records that were not printed because of their filter condition.
LL.FcountDataThisPage	Number of data records transferred by the program on the current page. This number also includes the data records that were not printed because of their filter condition.
LL.FcountPrintedData	Number of records actually printed.
LL.FcountPrintedDataThisPage	Number of data records actually printed on the current page.
LL.Relations.* (only with multiple tables)	Available relationships.
LL.TableLineIndex	Returns the index of the data line in a table.
LL.VisibleTableLineIndex	Returns the index of the visible data line in a table.
LL.Tables.* (only with multiple tables)	Available tables.
Reference.Level	Level in the table of contents or index. Can be defined using the appropriate property. See also "Report Sections" in Chapter "Page Layout".
Reference.PageIndex	Page number for the index entry.
Reference.PageNumber	Page number for the directory entry.
Reference.Text	Text to the table of contents or index to be displayed. Can be defined via the corresponding property.

12. Overview of Functions

All functions are listed here alphabetically. In the formula wizard, you also have an additional list sorted by functional group.

Abs

Purpose:

Calculate the absolute value of a number. A negative value will be returned as positive and a positive value will remain unchanged.

Parameter:

Number

Return value:

Number

Example:

Abs(-3)	Result:3
Abs(3.12)	Result: 3.12

AddDays

Purpose:

Adds the given number of days to the date, or subtracts the number of days when a negative value is entered.

Parameter:

Date

Number

Return value:

Date

AddHours

Purpose:

Adds the given number of hours to the date, or subtracts the number of hours when a negative value is entered.

Parameter:

Date

Number

Return value:

Date

AddMinutes

Purpose:

Adds the given number of minutes to the date, or subtracts the number of minutes when a negative value is entered.

Parameter:

Date

Number

Return value:

Date

AddMonths

Purpose:

Adds the given number of months to the date, or subtracts the number of months when a negative value is entered.

Parameter:

Date

Number

Return value:

Date

AddSeconds

Purpose:

Adds the given number of seconds to the date, or subtracts the number of seconds when a negative value is entered.

Parameter:

Date

Number

Return value:

Date

AddWeeks

Purpose:

Adds the given number of weeks to the date, or subtracts the number of weeks when a negative value is entered.

Parameter:

Date

Number

Return value:

Date

AddYears

Purpose:

Adds the given number of years to the date, or subtracts the number of years when a negative value is entered.

Parameter:

Date

Number

Return value:

Date

Alias$

Purpose:

Returns the value that is specified for the key (first parameter) in the key/value-pairs (second parameter).

Parameter:

String — Expression for the value to be searched.

String — List of values (Form: <key=value>| [<key=value>]. To be able to use "|" or "=" in the value or key, place a "\" infront of it.

String (optional) Default if the value cannot be found.

Return value:

String

Example:

Alias$("USA", "DEU=Deutschland|USA=United States of America|GB=United Kingdom") Result: United States of America

ApplicationPath$

Purpose:

Returns the path of the application.

Parameter:

Boolean — (optional) Defines if the path is returned including the file name (Default: False)

Return value:

String

Example:

ApplicationPath$() Result: "C:\Program Files (x86)\combit\LL\"

ArcCos

Purpose:

Calculates the arccosine of the value.

Parameter:

Number Value

Number (optional) Mode (0=Degree, 1=Radian). Default: 0.

Return value:

Number

Example:

ArcCos (0) Result: 90

ArcSin

Purpose:

Calculates the arcsine of the value.

Parameter:

Number Value

Number (optional) Mode (0=Degree, 1=Radian). Default: 0.

Return value:

Number

Example:

ArcSin (0.5) Result: 30,00

ArcTan

Purpose:

Calculates the arccotangent of the value.

Parameter:

Number Value

Number (optional) Mode (0=Degree, 1=Radian). Default: 0.

Return value:

Number

Example:

ArcTan (1) Result: 45,00

Asc

Purpose:

Returns the ASCII-Code of the first character of the string.

Parameter:

String

Return value:

Number

Example:

Asc("A") Result: 65

AskString$

Purpose:

With this function, information can be requested from the user during printing. A typical example of use for this function would be in a project for a bank transfer form. Information that remains constant, such as name and bank details of the sender, can be integrated directly into the project as fixed text or variables. The transfer amount, however, will almost always be different. With the function AskString$(), this information can be requested from the user during printing.

At print time, a dialog will appear in which the needed information can be entered.

The dialog allows the entered value to be carried over. Abort with "Cancel".

With the button "All", the entered value will be automatically used for all future result for the AskString$ function during thus print job. This is useful when the value remains constant over all records.

Parameter:

String	The first parameter contains some descriptive text that will appear in the dialog. Since this is a formula, fixed text must be entered in quotation marks, for example "Transfer amount:". This first parameter must be entered, all remaining parameters are optional. If no other parameter(s) is/are entered, the first string is also the default setting for the user input.
Boolean	(optional) The second parameter allows you to define whether the dialog should be shown once prior to printing (default, FALSE), or if the dialog should be shown for each record (TRUE).

String (optional) The third parameter contains the string that appears as the recommended value for the user input. Since this is a formula, fixed text must be entered in quotation marks, for example "50.00 USD".

Number (optional) The last parameter defines the number of characters that can be entered by the user. A value of 16, for example, allows the user to enter a maximum of 16 characters.

Return value:

String

Example:

AskString$("Transfer amount",True,"50.00 USD",16)

Opens a dialog with the title "Transfer amount", a recommended value of "50.00 USD" and a maximum of 16 characters. Since the second parameter is TRUE, the dialog will be shown for each record to be printed.

AskStringChoice$

Purpose:

Prompts the user to choose a value for the specified variable from a combobox at print time.

Parameter:

String Text, which is displayed and should specify what is to be entered.

Boolean (optional) Sets whether the dialog should be shown once prior to printing (default, FALSE), or if the dialog should be shown for each record (TRUE).

String (optional) The combobox entries. The single entries of the combo box are separated by "|". If one of the entries is '***' (three asterisks), the text is editable. So a new value which may be different from the list items can be entered.

Number (optional) Maximum length (Default: 8192 characters).

Return value:

String

Example:

AskStringChoice$ ("Document type".F.,"Offer|Invoice|Delivery note|***)

ATrim$

Purpose:

Removes spaces from the beginning and end of a string.

Parameter:

String

Return value:

String

Example:

Atrim$(" combit GmbH ") Result: combit GmbH

Avg

Purpose:

Generates the mean of the set of values that is produced by the first argument.

Parameter:

Number	Expression of the value to be calculated.
Boolean	(optional) TRUE: After the output, the values which were stored for the calculation are deleted. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

Avg(Order_Details.Quantity*Order_Details.UnitPrice)

Barcode

Purpose:

This function converts a string to a barcode.

Parameter:

String	Barcode value (contents)
String	Barcode type. The possible barcode types will be listed by the auto-complete function of the wizard. If the barcode cannot be correctly interpreted it will not be printed. Some barcodes require special formats that must be used. Further information can be found in Chapter "Supported Barcode".

Return value:

Barcode

Example:

Barcode(Upper$(Name),"3of9")

Barcode$

Purpose:

Returns the text contents of a barcode.

Parameter:

Barcode

Return value:

String

Example:

Barcode$(BC_3OF9) Result: "Item 4711"

BarcodeType$

Purpose:

Returns the type of the barcode as a string.

Parameter:

Barcode

Return value:

String

BasedStr$

Purpose:

Returns the value to any radix.

Parameter:

Number	Value.
Number	Radix (2 to 36).
Number	(optional) Minimum length of the string (without optional prefix). 0 for the minimal length (Default).
Boolean	(optional) Defines if a prefix ('0b' for radix 2, '0o' for radix 8, '0x' for radix 16) is inserted before the string (Default: False).

Return value:

String

Example:

BasedStr$ (1,2,1,True) Result: 0b1

BinaryAND

Purpose:

Links the two (integer) parameters binary with 'and' and returns the result.

Parameter:

Number Value.

Number Value.

Return value:

String

Example:

BinaryAND (01,10) Result: 0

BinaryAND (10,11) Result: 10

BinaryNOT

Purpose:

Negates the value binary and returns the result.

Parameter:

Number Value.

Return value:

String

Example:

BinaryNOT (10) Result: 5
(ten equivalent 1010, five equivalent 0101)

BinaryOR

Purpose:

Links the two (integer) parameters binary with 'or' and returns the result.

Parameter:

Number Value.

Number Value.

Return value:

String

Example:

BinaryOR (01,10) Result: 11

BinaryOR (10,11) Result: 11

BinarySHL

Purpose:

Shifts the value binary to the left.

Parameter:

Number Value.

Number Number of bits, the value is shifted.

Return value:

String

Example:

BinarySHL (1,1) Result: 2

BinarySHR

Purpose:

Shifts the value binary to the right.

Parameter:

Number Value.

Number Number of bits, the value is shifted.

Return value:

String

Example:

BinarySHR (2,1) Result: 1,00

BinaryXOR

Purpose:

Links the two (integer) parameters binary with 'exclusive or' and returns the result.

Parameter:

Number Value.

Number Value.

Return value:

String

Example:

BinaryXOR (01,10) Result: 11

BinaryXOR (10,11) Result: 1

BMPMapToGray

Purpose:

Converts the picture to greyscales. Only the BMP-format is supported.

Parameter:

Picture or String

Return value:

Picture

Example:

BMPMapToGray ("sunshine.gif")

BMPRotate

Purpose:

Rotates a picture by the given degree. Only the BMP-format is supported.

Parameter:

Picture or String

Number Rotation angle

Number (optional) Mode (0=Degree, 1=Radian)

Return value:

Picture

Example:

BMPRotate(Article.Picture,90)

Capitalize$

Purpose:

Returns a string in which the first letter of the individual words is a capital letter and the rest are small letters.

Parameter(s):

String

Return value:

String

Example:

Capitalize$ (Product.Category) Result: “Tea, Coffee, And Soft Drinks“

Case$

Purpose:

Converts a number, dependant upon the value, into a string. Assignment is made with a formatting string that contains the replacement string for the number values in ascending order.

Parameter:

Number	Number to be converted (n). The n-th value of the string will be copied to the return value string. If enough values do not exist, the string will remain empty.
String	Collection of strings separated by a particular character. If a third parameter does not exist, this is the "|" character, otherwise the first character of this parameter.
String	(optional) Separator for the formatting string (default: "|")

Return value:

String

Example:

Case$(Page(),"0|I|II|III|IV|V|VI|VII|VIII|IX|X")

Result: "III", if Page() = 3

Ceil

Purpose:

Calculates the next bigger integer based on the given value. See also function Floor().

Parameter:

Number	Value.

Return value:

Number

Example:

Ceil(5.6) Result: 6

Century

Purpose:

Returns the century of the date.

Parameter:

Date	
Boolean	(optional) sets whether the calculation should be carried out 'simply' (century starts with year 0) or 'historically' (century starts with year 1). Default: False

Return value:

Number

Example:

Century(Date("01.01.2000")) Result: 20

Century(Date("01.01.2001")) Result: 21
Century(Date("01.01.2000"),True) Result: 21

ChangeLightness

Purpose:

Changes the lightness of the given color value.

Parameter:

Number	Color (e.g. per RGB function)
Number	Factor by which the color is darkened or brightened. E.g. the color is half as bright with '0.5' and twice as bright with '2'.

Return value:

Number

Example:

ChangeLightness(LL.Color.Red,2)

CheckMod10

Purpose:

Calculates the modulo 10 checksum digit of the string. A special function with the weight values "{ 0, 9, 4, 6, 8, 2, 7, 1, 3, 5 }" for the corresponding digits. This is used in some barcodes.

Parameter:

String	A string of digits.

Return value:

Number

Chr$

Purpose:

Converts a number to a character. This character has the entered number as its ASCII-Code . For Unicode, the value is the Unicode code point. See also www.unicode.org.

Parameter:

Number	
Number	(optional) Defines the type of the parameter. 0=multibyte character sets, 1=Unicode. Default is Unicode.

Return value:

String

Example:

Chr$(64) Result: "@"

ChrSubst$

Purpose:

Searches a string for a string that is contained in the second parameter. Every occurrence of this string will be replaced by the string defined in the third parameter. If no third parameter exists, the strings will be removed.

Parameter:

String
String
String (optional)

Return value:

String

Example:

ChrSubst$("Otto", "Oo", "_")	Result: "_tt_"
ChrSubst$("Normalconsumer", "aeiou","??")	Result: "N??rm??lc??ns??m??r"
ChrSubst$("Normalconsumer", "aeiou")	Result: "Nrmlcnsmr"
ChrSubst$("3.1415926535",".",",")	Result: "3,1415926535"

Cond

Purpose:

Allows to define conditions. The first parameter is a logical expression that will be evaluated as "True" of "False". If the first expression is "True", the second expression will be returned as the result. If the expression is "False", the third expression will be returned as the result. If no third expression is entered, the return value will assume the following standard values, dependent upon its type:

2. Argument Type	Return value if expression = False
Boolean	False
String	"" (empty String)
Date	Julian Date value 0
Number	0
Picture	"" (empty String)
Barcode	"" (empty String)

Parameter:

Boolean

All

All (optional) The third parameter must be the same type as the second parameter.

Return value:

All

Example:

Cond(COUNTRY<>"USA",COUNTRY_LONG)

Cond(PRICE=0,"on request",Str$(PRICE,0,2))

Cond(empty(COMPANY),SALUTATION,COMPANY)

Constant.Pi

Purpose:

Returns the value of Pi.

Parameter: -

Return value:

Number

Example:

Constant.Pi() Result: 3,14159 (depending on the number of decimals)

Contains

Purpose:

Evaluates if a string contains another string (second parameter).

Parameter:

String

String

Number optional: 0 for case-sensitivity, 1 for ignoring. Default: 0.

Return value:

Boolean

Example:

Contains("Itemnumber: 12345", "1234") Result: True

Continued

Purpose:

Indicates that a text or RTF-object had a page break. This means that the current page is a result of the page break.

Parameter:

-

Return value:

Boolean

Cos

Purpose:

Calculates the cosine of the value.

Parameter:

Number	Value
Number	(optional) Mode (0=Degree, 1=Radian). Default: 0.

Return value:

Number

Example:

Cos (90) Result: 0

Count

Purpose:

Counts the number of values of the first argument. With this function, all Null values in the argument are included in the count. Use the CountIf() function when you want to disregard Null values.

Hint: Sum variables (see "Sum Variables") are an alternative way of creating counters. Sum variables are principally applicable to whole tables. Aggregate functions principally table specific.

Parameter:

All	Values to count (sets the value to count). Needed to define the table (subtable) for which the records shall be counted.
Boolean	(optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values will be already deleted within the table.

Return value:

Number

Example:

Count(Order_Details.ProductID)

NthLargest(Article.Price,Count(Distinct(Artikel.Stkpreis),True)-1, True)

Calculates the second-smallest value, only taking repeated values into account once.

CountIf

Purpose:

Counts the number of values that comply with the condition. Use the function Distinct() when repeated values are only to be counted once.

Parameter:

Boolean	Expression for the comparison.
Boolean	(optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values will be already deleted within the table.

Return value:

Number

Example:

CountIf(Customers.Region="EMEA")

CountIf(IsNull (Orders.OrderDate)) counts all values with empty fields.

Crosstab.Cells.Avg

Purpose:

Returns the average of the cell contents. Only available in crosstab objects.

Parameter:

Boolean	(optional) True: Only defined values are entered into the calculation (Default: False). Defined values: if you are, for example, analyzing customers and quarters, the quarters without turnover constitute an undefined value and can be treated separately in the calculation.
Number	(optional) Row layer (0= bottom layer or innermost group, 1= next lowest, ...). Default: 0.
Number	(optional) Column layer (0= bottom layer or innermost group, 1= next lowest, ...). Default: 0.

Return value:

Number

Crosstab.Cells.Max

Purpose:

Returns the largest value of the cell contents. Only available in crosstab objects. For the parameters and their meaning, see function Crosstab.Cells.Avg().

Crosstab.Cells.Min

Purpose:

Returns the smallest value of the cell contents. Only available in crosstab objects. For the parameters and their meaning, see function Crosstab.Cells.Avg().

Crosstab.Cells.Sum

Purpose:

Returns the sum of the cell contents. Only available in crosstab objects. For the parameters and their meaning, see function Crosstab.Cells.Avg().

Crosstab.Col$

Purpose:

Returns the column header for the cell currently being output. Only available in crosstab objects.

Parameter:

Number (optional) Column layer (0= lowest layer or innermost group, 1= next lowest, ...). Default: 0.

Return value:

String

Crosstab.Col

Purpose:

Returns the column index for the cell currently being output. Only available in crosstab objects.

Parameter:

Boolean (optional) True: layer (only cells in this layer count), Default: False.

Return value:

Number

Crosstab.Row$

Purpose:

Returns the row header for the cell currently being output. Only available in crosstab objects.

Parameter:

Number (optional) Row layer (0= lowest layer or innermost group, 1= next lowest, ...). Default: 0.

Return value:

String

Crosstab.Row

Purpose:

Returns the row index for the cell currently being output. Only available in crosstab objects.

Parameter:

Boolean (optional) True: layer (only cells in this layer count), Default: False.

Return value:

Number

Crosstab.Value

Purpose:

Returns the cell's content.

Parameter: -

Return value:

Number

CStr$

Purpose:

Formats a number according to a format string. This is identical to the formatting information for the function printf() in the language C. The first parameter is a number of double precision, and the conversion operator can assume i.e. the following values: 'f', 'g', 'G', 'e', 'E'.

Parameter:

Number

String format string in C-notation, i.e. '%<format>f'.

Return value:

String

Example:

CStr(Pi,"%5.1f")	Result: " 3.1"
CStr(100*Pi,"num: %g")	Result: "num: 3.141593e+02"

CurrentDataLineIndex

Purpose:

Returns the continuous index of the output data lines of a table.

Parameter:

String Tabel name (incl. hierarchy). Default: active table.

Return value:

Number

CurrentLineIndex

Purpose:

Returns the continuous index of the line definition where the function is used. Lines that are hidden via a condition won´t be counted.

Parameter: -

Return value:

Number

CurrentLineTypeIndex

Purpose:

Returns the continuous index of the line type (Header, Footer, Data, …) where the function is used. Blocks that are hidden via a condition won´t be counted.

Parameter: -

Return value:

Number

Date

Purpose:

Converts a string to a date.

- If the string Contains a dot ".", it will be read in the "d.m.y" format (German).

- If the string contains a diagonal slash "/", it will be read in the "m/d/y" format (US English).
- If the string contains a dash "-", if will be read in the "y-m-d" format (ANSI).
- If the input cannot be correctly interpreted, then the date represents a value that is larger than all other values, (1e100). The return value can be evaluated for correctness using "JulianToDate(1e100)".
- When one or two digits represent the year, all values under 30 will be applied to the 21st century (20xx) and all values over 30 will be applied to the 20th century (19xx).

Parameter:

String

Return value:

Date

Example:

```
Date("17.10.2015")
Date("10/17/2015")
Date("2015-10-17")
```

Date$

Purpose:

Converts a date, using a format string, into an appropriately formatted string.

Composition of the format string: this is a normal string into which placeholders can be embedded.

Place holder	Description
%d	Day (1..31)
%<n>d	Day to <n> digits
%0<n>d	Day to <n> digits, filled on left with '0's
%w	Weekday (1..7)
%<n>w	Weekday to <n> digits
%0<n>w	Weekday to <n> digits, filled on left with '0's
%W	Week of year
%<n>W	Week of year to <n> digits
%0<n>W	Week of year to <n> digits, filled on left with '0's
%m	Month (1..12)

%<n>m	Month to <n> digits
%0<n>m	Month to <n> digits, filled on left with '0's
%y	Year
%<n>y	Year, to <n> digits
%0<n>y	Year, to <n> digits, filled on left with '0's
%q	Quarter
%D	Weekday, written out
%M	Month, written out
"%e", "%<n>e"	Year in the local calendar (Japan: Emperor's year)
"%g", "%<n>g"	Era of the local calendar (Japan: Emperor's era)
"%g", "%1g"	Single letter, Latin letters
"%gg", "%2g"	Single letter, localized
"%ggg", "%3g"	Long name, localized
"%gggg", "%4g"	Long name, Latin letters
"%x"	Localized date, short form
%H	Hours in 24h-format
%h	Hours in 12h-format
%<n>h	Hours in <n> digits
%i	Minutes
%<n>i	Minutes in <n> digits
%s	Seconds
%<n>s	Seconds in <n> digits
%PM	AM or PM

As long as one of the above formats is used, the optional third parameter can be used to set the locale. If the second parameter contains a valid ISO 3166-Country code, the third parameter can be used to set either the short "0" or long "1" format.

Parameter:

Date Value to be formatted.

String (optional) Format description or ISO 3166-Country code.

String (optional) ISO 3166-Country code or date format.

Return value:

String

Example:

Date$(Today(),"%D, %d/%m/%y") Result: Thursday, 8/11/2015

Date$(Today(),"%2WthWeek; %D, %2d/%2m/%4y") Result: 45th Week, Thursday, 8/11/2015

Date$(Today(),"%D, %3d/%02m/%4y") Result: Thursday, 8/11/2015

Date$ (Now(),"%02h:%02i:%02s %PM") Result: 04:03:50 PM

DateDiff

Purpose:

Returns the difference between two dates in days.

Parameter:

Date First date value

Date Second date value

Return value:

Number

Example:

DateDiff(Date("01.01.2015"),Date("01.03.2015")) Result: 59

DateDiff$

Purpose:

Returns the difference between two dates in days as string.

Composition of the format string: this is a normal string into which placeholders can be embedded.

Place holder	Description
%y	Number of years
%<n>y	Years to <n> digits
$y	String "Years"
%m	Number of months
%<n>m	Months to <n> digits
$m	String "month" or "months"
%w	Number of weeks
%<n>w	Weeks to <n> digits
$w	String "week" or "weeks"

%d	Number of days
%<n>d	Days to <n> digits
$d	String "day" or "days"
%h	Number of hours
%<n>h	Hours to <n> digits
$h	String "hour" or "hours"
%i	Number of minutes
%<n>i	Minutes to <n> digits
$i	String "minute" or "minutes"
%s	Number of seconds
%<n>s	Seconds to <n> digits
%.<n>s	Seconds with <n> decimals
$s	String "second" or "seconds"

Parameter:

Date First date value

Date Second date value

String (optional) Format

Return value:

String

Example:

DateDiff$(Date("01/01/2015"),Date("03/01/2015")) Result: 2 Months

DateHMS

Purpose:

Converts three numbers for hour, minute and second into a date.

Parameter:

Number Hour

Number Minute

Number Second

Return value:

Date

DateInLeapYear

Purpose:

Checks if the given date is in leap year or not. The calculation is made according to the proleptic gregorian calendar.

Parameter:

Date

Return value:

Boolean

Example:

DateInLeapYear("01.01.2015") Result: True

DateInRange

Purpose:

Evaluates if the date falls within the entered time interval:

Minimum Date: JulianToDate(0)

Maximum Date: JulianToDate(1e100)

Parameter:

Date	Date to be evaluated.
Date	Lower limit of the test interval.
Date	Upper limit of the test interval.

Return value:

Boolean

Example:

DateInRange(Date("2015.10.20"),Date("2015.2.29"),Today()) Result: True

DateToJulian

Purpose:

Calculates the Julian value of a date. Each day (even those in the past) are assigned a unique number.

Parameter:

Date

Return value:

Number

Example:

DateToJulian(Today()) Result: 2457023

DateYMD

Purpose:

Converts three numbers for day, month and year into a date.

Parameter:

Number Year

Number Month

Number Day

Return value:

Date

Example:

DateYMD(2015, 11, 1) Result: 01.11.2015

Day

Purpose:

Determines the day (1...31) of the month and returns it as a number.

Parameter:

Date

Return value:

Number

Example:

Day(Date("17.10.2015")) Result: 17

Day$

Purpose:

Determines the day (1…31) of the month of a date and returns it as a string.

Parameter:

Date

Return value:

String

Example:

Day$(Date("17.10.2015")) Result: "17"

Decade

Purpose:

Returns the decade of the date. Hint: The value is always relative to the start of the century (1..10)!

Parameter:

Date

Boolean (optional) sets whether the calculation should be carried out 'simply' (decade starts with year 0) or 'historically' (decade starts with year 1). Default: False

Return value:

Number

Example:

Decade(Date("01.01.2015"))	Result: 2
Decade(Date("01.01.2000"))	Result: 10
Decade(Date("01.01.2000"),True)	Result: 1

DisplayValues$

Purpose:

Converts the report parameter contents into their display values (according to the parameter configuration).

Parameter:

All Report Parameter

Return value:

String

Example:

DisplayValues$ (@Param1)	Result: "Value1; Value2; Value3"

Distinct

Purpose:

Affects the higher order aggregate function (e.g. Sum(), Avg(), Count()...) and causes equal values only to be used once in the calculation.

Parameter:

All

Return value:

All

Example:

Count(Distinct(Customers.Country))

Dow

Purpose:

Returns the day of the week to a number(1...7), 1=Sunday, 2=Monday, ...

Parameter:

Date

Return value:

Number

Example:

Dow(Date("04.07.1776")) Result: 5

Dow$

Purpose:

Returns the day of the week as a string in accordance with the country settings, "Sunday", "Monday", ...

Parameter:

Date

Return value:

String

Example:

Dow$(Date("04.07.1776")) Result: Thursday

Drawing

Purpose:

Converts a string type file path into a picture.

Parameter:

String

Return value:

Drawing

Drawing$

Purpose:

Converts a picture into a string type file path.

Parameter:

Picture

Return value:

String

DrawingHeightSCM

Purpose:

Returns the height of the Picture in SCM units (1/1000 mm).

Parameter:

Picture

Return value:

Number

DrawingWidthSCM

Purpose:

Returns the width of the Picture in SCM units (1/1000 mm).

Parameter:

Picture

Return value:

Number

Empty

Purpose:

Evaluates if a string is empty. If it is empty, "True" will be the return value, otherwise "False". Useful, for example, to determine if the field "ADDRESS" is empty, and if it is, in combination with the IF-THEN-ELSE condition cond(), either print the contents of the field "ADDRESS" or "POBOX".

The third parameter allows the removal of leading and trailing spaces. If this is evaluated as "True", a string consisting only of multiple spaces will be recognized as empty.

Parameter:

String

Boolean (optional)

Return value:

Boolean

Example:

Empty("xyz")	Result: False
Empty("")	Result: True

EndsWith

Purpose:

Checks whether the string in the first argument ends with the string in the second argument.

Parameter(s):

String

String

Boolean — Specifies whether capitals/small letters are relevant. Default value: False

Return value:

Boolean

Examples:

EndsWith ("Hallo World","rld")	Result: True
EndsWith ("Hallo World","llo")	Result: False

Evaluate

Purpose:

Evaluates the expression passed as parameter.

Parameter:

String

Return value:

All

Example:

Evaluate("3*4")	Result: 12
Evaluate("4-3")	Result: 1

Even

Purpose:

Evaluates if a number is even. If the number is even, "True" will be returned, otherwise "False".

Parameter:

Number

Return value:

Boolean

Example:

```
"Page number "+Cond(Even(Page()),"even","odd")
```

Exists

Purpose:

Checks if a variable or field is defined. Is often used in connection with GetValue() and Evaluate().

Parameter:

String

Return value:

Boolean

Example:

Exists("CustomerID") Result: False

If(Exists("Customer.Status"),Evaluate("Customer.Status"),"no customer status")

Exp

Purpose:

Calculates the exponential (e^x).

Parameter:

Number

Return value:

Number

Example:

Exp(3) Result: 20.08553692

Exp10

Purpose:

Calculates 10 raised to the power of number (10^x).

Parameter:

Number

Return value:

Number

Example:

Exp10(3) Result: 1000

ExtractDate

Purpose:

Returns the argument as date without time.

Parameter:

Date

Return value:

Date

Example:

ExtractDate(Date('04.07.1776 12:00:00')) Result: 04.07.1776

ExtractTime

Purpose:

Returns the argument as time without date.

Parameter:

Date

Return value:

Date

Example:

Date$(ExtractTime(Date('04.07.1776 12:11:10')), "%02h:%02i:%02s")
Result: 12:11:10

FirstHeaderThisTable

Purpose:

Returns whether the header of the table is being output for the first time. The function can be used as an appearance condition for the header to prevent it being printed more than once if the table continues onto the next page due to space limitations. The header is then only printed at the beginning of the table.

Parameter:

-

Return value:

Boolean

Floor

Purpose:

Calculates the next smaller integer based on the given value. See also function Ceil().

Parameter:

Number

Return value:

Number

Example:

Floor(5.6) Result: 5

Frac

Purpose:

Calculates the fractional part of a number

Parameter:

Number

Return value:

Number

Example:

Frac(Pi) Result: 0.1415926535

FStr$

Purpose:

Formats a number according to the format string.

These consist of the following characters ("if negative" refers to the value to be formatted):

*	Digit or '*'-Prefix
$	Local currency symbol
-	Digit or sign, if negative
+	Digit or sign
(	Digit or '('-Prefix if negative
)	')'-Postfix if negative
#	Digit or space prefix
&	Digit or '0'
.	Decimal point
,	Comma, or space prefix

A prefix is a sign that precedes a value, when needed. The expression `Fstr$(1, "***")` results in `"**1"`. The value "1" is preceded by the characters "**".

A Postfix is a character that, when needed, is placed after a number.

These formatting characters can be combined as needed. If the number is too large for the desired format, a "*" string will be returned.

With the third (optional) parameter, additional formatting can be accomplished.

1	Removal of leading spaces. The use is similar to the functions RTrim$() and LTrim$().
2	Empty string if value Null.
3	Removal of leading spaces and empty strings when value is 0

Parameter:

Number

String Format string

Number (optional) Additional formatting

Return value:

String

Example:

Fstr$(3.142, "#")	Result: "3"
Fstr$(5003.1,"#,###.&&")	Result: "5.003,10"
Fstr$(3.142,"#.###")	Result: "3,142"
Fstr$(3.142,".######")	Result: "*******"
Fstr$(3.142,"(#.###)")	Result: " 3,142 "
Fstr$(-3.142,"(#.###)")	Result: "(3,142)"
Fstr$(3.142,"+#.###")	Result: "+3,142"
Fstr$(3.142,"-#.###")	Result: " 3,142"
Fstr$(-3.142,"-#.###")	Result: "-3,142"
Fstr$(3.142,"&&&.&&&")	Result: "003,142"
Fstr$(3.142,"***.***")	Result: "**3,142"
Fstr$(3.142,"$$$.$$$")	Result: "$$3,142"
Fstr$(3.142,"###.***")	Result: " 3,142"
Fstr$(5003.1,"#,###.&&")	Result: "5.003,10"
Fstr$(3.142,"#####")	Result: " 3"

GeometricAvg

Purpose:

Calculates the geometric average of the set of values that result from the first parameter / formula.

Parameter:

Number	Expression for the value to be averaged.
Boolean	(optional) True: The values which were stored for the calculation are deleted after output. (default: True). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

GetValue

Purpose:

Returns the value of a variable or field. Is often used in connection with Exists().

Parameter:

String

Return value:

All

Example:

GetValue("Customers.CustomerID") Result: 1234

If(Exists("Customer.Status"),Evaluate("Customer.Status"),"no customer status")

GetVar

Purpose:

Fetches a value that was set with the SetVar() function from the variable repository. The purpose of these functions is to provide a simple buffer for values. You shouldn't execute complex nesting with GetVar/SetVar or combine both functions with each other - especially for header, footer and group lines unexpected effects can occur here.

Parameter(s):

All	Description of variable

Return value:

All

Example:

GetVar ("Page") Result: contents of "Page", set by SetVar()

HeatmapColor

Purpose:

Calculates a color value within a color gradient with 7 levels according to the value of the first parameter..

Parameter:

Number	Value to be displayed
Number	Lower limit
Number	Upper limit

Return value:

Number

Example:

HeatmapColor (70,-60,100) Result: Locates 70°F on a scale between -60°F and 100°F.

Hour

Purpose:

Determines the hour of the date and returns it in number format. If the parameter is not used, the hour of the print time will be returned.

Parameter:

Date (optional)

Return value:

Number

Example:

A condition can evaluate if the current hour has the value "10". The value of the current hour must be determined and then compared to the value "10".

Hour()=10

HSL

Purpose:

Calculates a color value in the HSL color space (Hue, Saturation, Lightness)

Parameter:

Number	Hue [0-360] (0°=red, 120°=green, 240°=blue)
Number	Saturation [0-1]
Number	Lightness [0-1] (0=no lightness, 1=full lightness)

Return value:

Number

Example:

HSL (0,0.5,1) Result: Green with half-saturation and full lightness

HTMLtoPlainText$

Purpose:

Returns the plain and unformatted text of the HTML content.

Parameter:

String	HTML Content

Return value:

String

Hyperlink$

Purpose:

The function Hyperlink$ creates a hyperlink text that can be inserted using an export module. When available, the hyperlink will only be embedded if the third parameter returns a result of "True" (=default).

To optionally use a hyperlink only on a HTML page, you need to use the variable LL.OutputDevice:

Hyperlink$("combit","http://www.combit.net",LL.OutputDevice="HTML")

If an object text contains the string:

<!--begin:hyperlink="target"-->"Display text"<!--end:hyperlink-->

then a hyperlink will be automatically created in the exported HTML page. The hyperlink function automatically creates a string with the correct syntax.

Parameter:

String	Text
String	Hyperlink
Boolean	(optional) Embedded

Return value:

String

Example:

```
Hyperlink$("combit","http://www.combit.net")
```

If

see Cond

IssueIndex

Purpose:

Returns the Issue Index (1..) for display and layout region conditions, if multiple issues are selected in the project parameters

Parameter:

Number

Return value:

Number

Int

Purpose:

Calculates the integer value of a number. The value will be truncated.

Parameter:

Number

Return value:

Number

Example

Int(3,1) Result: 3

IsNull

Purpose:

Checks whether the transferred value or the result of the expression is Null, e.g. an empty date field.

Parameter:

All

Return value:

Boolean

IsNullOrEmpty

Purpose:

Checks whether a string is empty or Null.

Parameter(s):

String	The string to be checked
Boolean	(optional) If the value is True, then spaces at the beginning and end of the string are removed. Default value: False

Return value:

String

Example:

IsNullOrEmpty (“ “, True) Result: True

Join$

Purpose:

Collection of strings separated by a particular character.

Parameter:

String	Collection of strings separated by a particular character.
String	(optional) Separator for the formatting string (default: ";")
Number	(optional) Maximum number of values ('...' will be appended). Default: all values.
Boolean	(optional) True: The values which were stored are deleted after output. (Default: True). Please note that the stored values are generally deleted for every (sub)table end. The second parameter only decides whether the values will be already deleted within the table.

Return value:

String

JulianToDate

Purpose:

Interprets a number as a Julian date (each day is assigned a unique number) and returns the appropriate date.

Parameter:

Number

Return value:

Date

Example:

JulianToDate(2457023) Result: 01/01/2015

LangCase$

Purpose:

Returns one of the substrings according to the language that is set.

Parameter(s):

String	String that is returned if a localization string is not found. The localization string must be a valid ISO 639 language code.
String	String with translation substrings, separated by "|" (or by an optional third argument). Translation texts must be formatted as follows "ISO 639 language code = translation text|[ISO 639 language code = translation text|…]. If the

characters "|" or "=" are to be used in the value or the key, they must be preceded by "\", e.g. "USA=He\=llo".

String (optional) separator (default: "|")

Return value:

String

Example:

LangCase$("Hallo","USA=Hello|ESP=Hóla")

result: " Hóla " (with Spanish systems)

LastFooterThisTable

Purpose:

Returns whether the footer of the current table is being output for the last time. This function can be used as an appearance condition for the footer, in order to prevent the footer being printed if the table is continued on the next page due to space limitations. The footer is then only printed on the last page of the table.

Parameter:

-

Return value:

Boolean

Lastpage

Purpose:

Returns if the current page is also the last page. This function can only be used in the footer lines of tables, in objects linked with tables or in the layout regions condition! In all other cases, the result of Lastpage() is always False.

Parameter:

-

Return value:

Boolean

Example:

Cond(Lastpage(),"Total sum","Subtotal")

Left$

Purpose:

Reduces a string from the right so that only the number of characters set under Number remain. If the original string is already small enough, it is not affected.

Parameter:

String	The value to be shortened
Number	maximum number of positions of the result
Boolean	(optional) True: The cut off value is ended with "..." (Default: False). With numbers < 3 the setting is ignored.

Return value:

String

Examples:

If you had a customer database that contains, amongst other things, the field NAME for the surname. You now wish to search for all customers whose surname starts with "C". To do this, you must first identify the starting letters.

Left$(NAME, 1)	Result: the first letter of the NAME string.
Left$("combit", 2)	Result: "co"
Left$("combit", 4,True)	Result: "c…"
Left$("combit", 2, True)	Result: "co"

Len

Purpose:

Returns the number of characters in a string.

Parameter:

String

Return value:

Number

Example:

Len("1234"+"12") Result: 6

LibraryPath$

Purpose:

Returns the path of the List & Label DLL.

Parameter:

Booelan	(optional) Defines if the path is returned including the file name (Default: False)

Return value:

String

Example:

LibraryPath$() result: "C:\Program Files (x86)\combit\LL\"

LoadFile$

Purpose:

Outputs the contents of the file as a string.

Parameter:

String

String (optional) When the file is not available, the value set here is used.

Return value:

String

Example:

LoadFile$("C:\log.txt","File not found!")

Locale$

Purpose:

Returns information about the country settings, for example currency, decimals, separators, language and country code. The code for the appropriate country is entered in the second parameter, if no second parameter is used the default country settings will be used.

Parameter:

Number Index of Locale Entry
http://msdn.microsoft.com/en-us/library/bb507201.aspx

String (optional) Country code/ISO Code of country, whose format is to be used. Format: <ISO639>-<ISO3166> e.g. de-de or en-us.
http://msdn.microsoft.com/en-us/library/0h88fahh%28VS.85%29.aspx

Return value:

String

Example:

Locale$(42,"en-us") Result: "Monday"

LocCurr$

Purpose:

Returns a string with the valid currency format without the currency symbol for the entered country.

Parameter:

Number	Value to be formatted
String	(optional) Country code/ISO Code of country, whose format is to be used. Format: <ISO639>-<ISO3166> e.g. de-de or en-us. http://msdn.microsoft.com/en-us/library/0h88fahh%28VS.85%29.aspx

Return value:

String

Example:

LocCurr$(123,"en-us") Result: "123.00"

LocCurrL$

Purpose:

Returns a string with the valid currency format and currency symbol for the entered country.

Parameter:

Number	Value to be formatted
String	(optional) Country code/ISO Code of country, whose format is to be used. Format: <ISO639>-<ISO3166> e.g. de-de or en-us. http://msdn.microsoft.com/en-us/library/0h88fahh%28VS.85%29.aspx

Return value:

String

Example:

LocCurr$(123,"en-us") Result: "$123.00"

LocDate$

Purpose:

Returns a string with the valid date format for the entered country.

Parameter:

Date	Value to be formatted
String	(optional) Country code/ISO Code of country, whose format is to be used. Format: <ISO639>-<ISO3166> e.g. de-de or en-us. http://msdn.microsoft.com/en-us/library/0h88fahh%28VS.85%29.aspx
Number	(optional) 0=Short (default), 1=Long, 2=Short, alternative calendar, 3=Long, alternative calendar

Return value:

String

Example:

LocDate$ (Date("04.07.1776"),"en-us")	Result: 07/04/1776
LocDate$ (Date("04.07.1776"),"en-us",1)	Result: Thursday, July 04, 1776

LocDateTime

Purpose

Converts the string into a date (with time if required). The string is expected to be in the relevant format for the country.

Parameter:

String	Date
String	(optional) Country code/ISO Code of country, whose format is to be used. Format: <ISO639>-<ISO3166> e.g. de-de or en-us. http://msdn.microsoft.com/en-us/library/0h88fahh%28VS.85%29.aspx

Return value:

Date

Example:

LocDateTime("04.07.1776","en-us") Result: 07/04/1776

LocNumber$

Purpose:

Returns a string with the valid number format for the entered country.

Parameter:

Number	Value to be formatted
String	(optional) Country code/ISO Code of country, whose format is to be used. Format: <ISO639>-<ISO3166> e.g. de-de or en-us. http://msdn.microsoft.com/en-us/library/0h88fahh%28VS.85%29.aspx

Return value:

String

Example:

LocNumber$(123,"en-us") Result: "123.00"

LocTime$

Purpose:

Returns a string with the valid time format for the entered country.

Parameter:

Date	Value to be formatted
String	(optional) Country code/ISO Code of country, whose format is to be used. Format: <ISO639>-<ISO3166> e.g. de-de or en-us. http://msdn.microsoft.com/en-us/library/0h88fahh%28VS.85%29.aspx
Number	(optional) Format value: 0=normal (default), 1=24h format, 2=no AM/PM, 3=24h format, no AM/PM, format value +10 = no seconds, format value +20 = no minutes and no seconds.

Return value:

String

Example:

LocTime$ (Now(),"en-us")	Result: current system time
LocTime$ (Now(),"",11)	Result: always 24h format, no seconds

LocVal

Purpose:

Interprets the string as a number and returns its value (while respecting any localized decimal or 1000 separators).

Parameter:

String	Number (as string)
String	(optional) Country code/ISO Code of country, whose format is to be used. Format: <ISO639>-<ISO3166> e.g. de-de or en-us. http://msdn.microsoft.com/en-us/library/0h88fahh%28VS.85%29.aspx

Return value:

Number

Example:

LocVal ("12","de-de")	Result: 12,00
LocVal ("12,00","en-us")	Result:1200,00

Log

Purpose:

Calculates the natural logarithm ln(x).

Parameter:

Number

Return value:

Number

Example:

Log(Exp(1)) Result: 1

Log10

Purpose:

Calculates the base-10 logarithm log(x).

Parameter:

Number

Return value:

Number

Example:

Log10(1000) Result: 3

Lower$

Purpose:

Converts the characters of a string into lower case letters.

Parameter:

String

Return value:

String

Example:

Lower$("George") Result: "george"

LTrim$

Purpose:

Removes the leading spaces of a string.

Parameter:

String

Return value:

String

Example:

LTrim$(" George") Result: "George"

Max

Purpose:

Returns the largest of the two values.

Parameter:

Number or Date

Number or Date

Return value:

Number or Date

Maximum

Purpose:

Calculates the maximum of the set of values that result from the first parameter / formula.

Parameter:

Number

Boolean — (optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

Maximum(Order_Details.ProductID@Products.ProductID:UnitsInStock)

Median

Purpose:

Calculates the median of the set of values that result from the first parameter / formula.

Parameter:

Number — Expression for the value to be averaged.

Boolean — (optional) The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

Median(UnitsInStock)

Mid$

Purpose:

Returns a part of a string. The desired number of characters starting at the starting position will be returned.

If the third parameter is not used, the string will be returned from the starting position to the end.

The first character of the string has the Position 0.

Parameter:

String

Number Starting position

Number (optional) Number of characters to be displayed.

Return value:

String

Example:

Mid$("Normalconsumer",6)	Result: "consumer"
Mid$("Normalconsumer",6,30)	Result: "consumer"
Mid$("Normalconsumer",6,3)	Result: "con"
Mid$(Name,0,6)	Result: "Normal"

Min

Purpose:

Returns the smallest of the two values.

Parameter:

Number or Date

Number or Date

Return value:

Number or Date

Minimum

Purpose:

Calculates the minimum of the set of values that result from the first parameter / formula.

Parameter:

Number

Boolean (optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

Minimum (Quantity * UnitPrice) Result: [Lowest Total Price]

Minute

Determines the minute of the entered date, and returns the result as a number. If the parameter is not used, the minute of the time of printing will be returned.

Parameter:

Date (optional)

Return value:

Number

Mode

Purpose:

Calculates the mode (most common value) of the set of values that result from the first parameter / formula.

Parameter:

Number Expression for the value to be examined.

Boolean (optional) The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Month

Purpose:

Determines and returns the month (1...12) as a number.

Parameter:

Date

Return value:

Number

Example:

Month(Date("2015.10.17")) Result: 10

Month$

Purpose:

Determines and returns the month (1...12) as a string.

Parameter:

Date

Return value:

String

Example:

Month$(Date("2015.10.17")) Result: "10"

NativeAvg

Purpose:

Returns the average value.

Parameter:

All	Field or expression to aggregate.
Boolean	(optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).
Boolean	(optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeAvg(Order_Details.Quantity*Order_Details.UnitPrice)

NativeCount

Purpose:

Returns the number of value.

Parameter:

All	Field or expression to aggregate.

Boolean	(optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).
Boolean	(optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeCount (Order_Details.Quantity*Order_Details.UnitPrice)

NativeMax

Purpose:

Returns the maximum value of the field or expression.

Parameter:

All	Field or expression to aggregate.
Boolean	(optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).
Boolean	(optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeMax (Order_Details.Quantity*Order_Details.UnitPrice)

NativeMin

Purpose:

Returns the minimum value of the field or expression.

Parameter:

All	Field or expression to aggregate.
Boolean	(optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).
Boolean	(optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeMin(Order_Details.Quantity*Order_Details.UnitPrice)

NativeStdDevPop

Purpose:

Returns the statistical standard deviation for the population of all values of the field or expression.

Parameter:

All	Field or expression to aggregate.
Boolean	(optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).
Boolean	(optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeStdDevPop(Order_Details.Quantity*Order_Details.UnitPrice)

NativeStdDevSamp

Purpose:

Returns the statistical standard deviation of all values of the field or expression.

Parameter:

All	Field or expression to aggregate.
Boolean	(optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).
Boolean	(optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeStdDevSamp(Order_Details.Quantity*Order_Details.UnitPrice)

NativeSum

Purpose:

Returns the sum of all values.

Parameter:

All	Field or expression to aggregate.
Boolean	(optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).

Boolean (optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeSum(Order_Details.Quantity*Order_Details.UnitPrice)

NativeVarPop

Purpose:

Returns the statistical variance for the population of all values of the field or expression.

Parameter:

All Field or expression to aggregate.

Boolean (optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).

Boolean (optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeVarPop(Order_Details.Quantity*Order_Details.UnitPrice)

NativeVarSamp

Purpose:

Returns the statistical variance of all values of the field or expression.

Parameter:

All Field or expression to aggregate.

Boolean (optional) Filter expression for the field or the expression to be aggregated. Default: True (all data).

Boolean (optional) Defines that only the unique values should be aggregated (DISTINCT). Default: False.

Return value:

Number

Example:

NativeVarSamp(Order_Details.Quantity*Order_Details.UnitPrice)

Now

Purpose:

Returns the current date and time.

Parameter:

-

Return value:

Date

NthLargest

Purpose:

Calculates the nth-largest value of the set of values that result from the first parameter / formula.

Parameter:

Number

Number	<n>, i.e. the index for the value which is to be returned (1-based).
Boolean	(optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

NthLargest(Order_Details.ProductID,2)	calculates the 2-largest number

NthLargestIndex

Purpose:

Calculates the index of the nth-largest value of the set of values that result from the first parameter / formula.

Parameter:

Number

Number	<n>, i.e. the index for the value which is to be returned (1-based).
Boolean	(optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted

for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

NthLargestIndex(Order_Details.ProductID,2)

NthValue

Purpose:

Calculates the nth value of the set of values that result from the first parameter / formula.

Parameter:

All

Number	<n>, i.e. the index for the value which is to be produced, calculated e.g. with NthLargestIndex().
Boolean	(optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

NthValue(NthLargestIndex(Order_Details.ProductID,2))

Null

Purpose:

Returns a Null value (value not available).

Parameter:

-

Return value:

All

NullSafe

Purpose:

Checks if the parameter is Null and returns a substitute value if it is, otherwise it returns the value of the parameter.

Parameter:

All

Return value:

All

NumInRange

Purpose:

Evaluates if a number falls within the desired range.

Parameter:

Number

Number Upper limit

Number Lower limit

Return value:

Boolean

Example:

NumInRange(Page(),1,10) Result: True, if page number is between 1 and 10.

Odd

Purpose:

Evaluates if a number is odd. If the number is odd "True" will be returned, otherwise "False".

Parameter:

Number

Return value:

Boolean

Example:

"Page number "+Cond(Odd(Page()),"odd","even")

Ord

Purpose:

Returns the ASCII value of the first character.

Parameter:

String

Return value:

Number

Example:

Ord("combit") Result: 99

Page

Purpose:

Returns the current page number.

Parameter:

-

Return value:

Number

Example:

Case(Odd(Page()),"Even","Odd")+" page number"

Page$

Purpose:

Returns the page number of the printed page as a string.

Parameter:

-

Return value:

String

Example:

"Page "+Page$()+"/"+TotalPages$() Result: Page 1/3

PlainTexttoHTML$

Purpose:

Returns the unformatted text as HTML content.

Parameter:

String text context

Return value:

String

Pow

Purpose:

Corresponds to the function (Base) ^ (Exponent).

Parameter:

Number	Base
Number	Exponent

Return value:

Number

Example:

Pow(2,3) Result: 8

Precalc

Purpose:

Calculates the value of the aggregate function for the table. Only available in the report container.

Parameter:

All	Function (typically a aggregate function)
All	Optional grouping function for the Precalc() function to output a group sum in the group header for example. Normally the same value as 'Group by'.
All	opt.: Condition for the aggregation (the value is only aggregated if the condition is matched).

Return value:

All

Example:

Precalc(Sum(Item.UnitPrice)) Result: Sum of the following item prices.

Previous

Purpose:

Returns the previous value of the variable, field or formula, i.e. the value it had for the last record.

Parameter:

All	Variable, field or formula

Return value:

All

Example:

Previous(NAME) Result: "consumer"

PreviousUsed

Purpose:

Returns the value the given variable or expression had when it was last evaluated.

Parameter:

All Variable, field or formula

Return value:

All

Example:

PreviousUsed(NAME) Result: e.g. "Miller"

ProjectParameter$

Purpose:

Returns the value of a project parameter. Available parameters:

LL.FAX.Queue	Print queue
LL.FAX.RecipName	Recipient name
LL.FAX.RecipNumber	Recipient fax number
LL.FAX.SenderBillingCode	Sender billing code
LL.FAX.SenderCompany	Sender company
LL.FAX.SenderDept	Sender department
LL.FAX.SenderName	Sender name
LL.MAIL.To	Mail address
LL.MAIL.CC	Mail address for carbon copy
LL.MAIL.BCC	Mail address for blind carbon copy
LL.MAIL.Subject	Subject line
LL.MAIL.From	Sender mail address
LL.MAIL.ReplyTo	Reply To mail address
LL.MinPageCount	Minimum page count.
LL.ProjectDescription	Project Description
LL.SlideShow.TransformationID	Default transition effect for the preview´s slideshow mode.
LL.MAIL.ShowDialog	Show mail dialog before sending

Parameter:

String Name of the project parameter

Boolean (optional) sets whether the return value (possibly a formula) should be returned directly (True), or should be evaluated (False). Default: False

Return value:

String

Example:

ProjectParameter$("LL.ProjectDescription") Result:"Article list"

ProjectPath$

Purpose:

Returns the path of the project file, optionally including the file name (otherwise with "\" at the end)

Parameter:

Boolean True: Sets that the path is returned including the file name (Default: False).

Return value:

String

Example:

ProjectPath$() Result: C:\Program Files\LL\

ProjectPath$(True) Result: C:\Program Files\LL\crosstab.lsr

Quarter

Purpose:

Returns the quarter of the year (1..4)

Parameter:

Date

Boolean (optional) sets whether the quarter calculation should be returned relative to the year (1..4) or in absolute terms since 1.1.0001 (1..). Default: False (relative).

Return value:

Number

Example:

Quarter(Date("01.01.2015")) Result: 1

Quarter(Date("01.05.2015")) Result: 2

Quarter(Date("01.05.2015"),true) Result: 8058

RainbowColor

Purpose:

Calculates a color value between blue and red corresponding to the value of the first parameter e.g. for rainbow colors in crosstabs.

Parameter:

Number	Value to be displayed.
Number	Until this value the color is "blue".
Number	Until this value the color is "red".

Return value:

Number

RegExMatch$

Purpose:

Returns the part of the string that corresponds to the regular expression or the group passed in the third parameter.

The regular expression corresponds to Pearl 5 Syntax, which in most details equals the regular expression syntax of the Visual Basic Scripting engine.

Parameter:

String

String

Number

Return value:

String

Example:

Division of the "STREET" field to street and number:

"Street: " + RegExMatch$(STREET,"((?:\w*)+)(\d+[\w]*$)",1) "Number: " + RegExMatch$(STREET,"((?:\w*)+)(\d+[\w]*$)",2)

RegExMatch$("test1234xyz0815", "[0-9]+") Result: "1234"

RegExSubst$

Purpose:

Replaces the substrings of the first argument with a new value if they match the regular expression.

Parameter(s):

String	The string to be checked
String	Regular expression

String — Replacement expression (can contain "\0" for the entire match or "\1"… "\9" for the respective group.

Boolean — (optional) Specifies whether only the first occurrence is to be replaced. Default value: False

Return value:

String

Example:

RegExSubSt$("1234xyz6789","[0-9]+", "a") Result: "axyza"

RegExSubSt$("1234xyz6789","[0-9]+", "a") Result: "axyz6789"

RemainingTableSpace

Purpose:

Returns the space available to data and group lines in a table object. The parameter defines the unit of the return value. The function can be used to carry out conditional page breaks before group lines, e.g. "Page break before only 5% space is left".

Parameter:

Boolean — (optional) TRUE: the value is in units which are independent of the system (SCM-units), FALSE: the value is a percentage of the entire table size (default: FALSE).

Return value:

Number

Rep$

Purpose:

Returns a string that contains the appropriate number of strings defined in the first parameter.

Parameter:

String

Number

Return value:

String

Example:

Rep$("-",10) Result: "----------"

Rep$("+-",5) Result: "+-+-+-+-+-"

ReportSectionID$

Purpose:

Returns the name of the report section ("IDX" for index, "TOC" Table of Contents).

Parameter: -

Return value:

String

Example:

ReportSectionID$()="IDX"

RGB

Purpose:

Calculates the color value using the relative red, green and blue saturation values (between 0 and 255). No saturation has the value 0, full saturation the value 255. This function can be used to set the font color using a formula.

Parameter:

Number	red saturation
Number	green saturation
Number	blue saturation

Return value:

Number

Example:

Cond(Amount<0, RGB(255,0,0), RGB(0,0,0) Result: red for negative amounts

Right$

Purpose:

Reduces a string from the left so that only the number of characters set under Number remain. If the original string is already small enough, it is not affected.

Parameter:

String	
Number	
Boolean	(optional) True: The cut off value starts with "..." (Default: False). If Number < 3 the setting is ignored.

Return value:

String

Example:

Right$("normalconsumer", 8) Result: "consumer"

Right$("normalconsumer", 11,.T.) Result: "...consumer"

Roman$

Purpose:

Returns the roman display of the absolute value of the given number.

Parameter:

Number Value to be formatted

Number (optional) Display type: 0=upper case, 1=Lower case, 2=Upper case Unicode, 3=Lower case Unicode. Default: 0.

Return value:

String

Example:

Roman$(11) Result: "XI"

Round

Purpose:

Rounds a value to the entered number of decimal places. Default is 0.

Parameter:

Number

Number (optional)

Return value:

Number

Example:

Round(3.1454,2) Result: 3,15

Round(3.1454) Result: 3

RTFtoPlainText$

Purpose:

Returns the plain, unformatted text of a RTF text.

Parameter:

String RTF text

Return value:

String

Rtrim$

Purpose:

Removes spaces from the end of a string.

Parameter:

String

Return value:

String

Example:

RTrim$("John ") Result: "John"

Script$

Interprets the result of a script as string. This function is not available for all applications.

Parameter:

String	Script language (e.g. 'CSharpScript', 'VBScript')
String	Code
Boolean	(optional) Function

Return value:

String

Example:

Script$("CSharpScript", LoadFile$(ProjectPath$(False) + "Script.cs"))

ScriptBool

Interprets the result of a script as boolean. This function is not available for all applications.

Parameter:

String	Script language (e.g. 'CSharpScript', 'VBScript')
String	Code
Boolean	(optional) Function

Return value:

Boolean

Example:

ScriptBool("CSharpScript", "WScript.Result=DateTime.IsLeapYear(1971);")

ScriptDate

Interprets the result of a script as date. This function is not available for all applications.

Parameter:

String	Script language (e.g. 'CSharpScript', 'VBScript')
String	Code
Boolean	(optional) Function

Return value:

Date

Example:

```
ScriptDate("CSharpScript", "WScript.Result=new DateTime(1971,10,25);")
```

ScriptVal

Interprets the result of a script as number. This function is not available for all applications.

Parameter:

String	Script language (e.g. 'CSharpScript', 'VBScript')
String	Code
Boolean	(optional) Function

Return value:

Number

Example:

```
ScriptVal("CSharpScript", LoadFile$(ProjectPath$(False) + "Script.cs"))
```

Second

Determines the second of the entered date and returns the result as a number. If the parameter is not used, the second of the print time will be returned.

Parameter:

Date	(optional)

Return value:

Number

SetVar

Saves a value in the variable repository for later use with the GetVar() function. The purpose of these functions is to provide a simple buffer for values. You shouldn't execute complex nesting with GetVar/SetVar or combine both functions with each other - especially for header, footer and group lines unexpected effects can occur here.

Parameter(s):

String	Description of variable
All	Value to store
Boolean	Defines if the function should also return the value or if the result should be an empty string. Default: Return value (True).

Return value:

All

Example:

SetVar ("Page", Page())

Sign

Purpose:

Returns the sign of the value (+1 for a positive value, -1 for a negative value or 0 if the value is 0).

Parameter:

Number	Value

Return value:

Number

Example:

Sign (-3) Result: -1

Sin

Purpose:

Calculates the sine of the value.

Parameter:

Number	Value
Number	(optional) Mode (0=Degree, 1=Radian). Default: 0.

Return value:

Number

Example:

Sin (90) Result: 1

Sqrt

Purpose:

Calculates the square root of a number.

Parameter:

Number

Return value:

Number

Example:

Sqrt(4) Result: 2

StartsWith

Purpose:

Checks whether the string in the first argument begins with the string in the second argument.

Parameter(s):

String

String

Boolean Specifies whether capitals/small letters are relevant. Default value: False

Return value:

Boolean

Examples:

StartsWith ("Hello World","hel") Result: True

StartsWith ("Hello World","rld") Result: False

StdDeviation

Purpose:

Calculates the standard deviation of the set of values that result from the first parameter / formula.

Parameter:

Number

Boolean (optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

StdDeviation(Order_Details.Quantity*Order_Details.UnitPrice)

Str$

Purpose:

Converts a number or date into a string. The number will be formatted with 5 decimal places that may be rounded. The length is variable.

Parameter:

Number or Date

Number	(optional) Defines the length of the string (default:6). If the number is too large for this format, the resulting string may then be longer than desired. If the number is too small, spaces will be attached dependent upon the prefix, right (negative) or left (positive).
Number	(optional) Defines the precision (number of decimal places). If the number is positive, the number will be displayed as a floating-point number, if negative in scientific format.

Return value:

String

Example:

Str$(Constant.Pi())	Result: "3.14159"
Str$(Constant.Pi(),0,2)	Result: "3.14"
Str$(Constant.Pi(),5,2)	Result: " 3.14"
Str$(Constant.Pi(),12,-3)	Result: "-3.141e+00"

StrPos

Purpose:

Returns the position of the nth appearance of a search string. The third parameter determines which appearance will be returned. Default is 1.

The first character in the string has the position 0.

-1 as return value signifies the search string no longer appears.

Parameter:

String

String	Search string
Number	(optional)

Return value:

Number

Example:

StrPos("Normalconsumer","or")	Result: 1
StrPos("Normalconsumer","r")	Result: 2
StrPos("Normalconsumer","r",1)	Result: 2
StrPos("Normalconsumer","r",2)	Result: 13

StrRPos

Purpose:

Returns the position of a search string within a string. This is a backwards search. The third parameter, determines which appearance will be returned. Default is 1.

The first character in the string has the position 0.

-1 as return value signifies the search string no longer appears.

Parameter:

String

String	Search string
Number	(optional)

Return value:

Number

Examples:

StrRPos("Normalconsumer","or")	Result: 1
StrRPos("Normalconsumer","r")	Result: 13
StrRPos("Normalconsumer","r",1)	Result: 13
StrRPos("Normalconsumer","r",2)	Result: 2

StrSubst$

Purpose:

Searches a string for the appearance of a search string and replaces it with the string contained in the third parameter (replacement string). If no third parameter is used, the string located using the search string will be deleted.

Parameter:

String

String	Search string
String	(optional) Replacement string

Return value:

String

Example:

Assume that you want to print address labels that contain the company name. You do not have much space available on the label and cannot afford to completely print long company names, for example, "Forrer Construction, Incorporated".

With the expression `StrSubst$(COMPANY,"Incorporated","Inc.")` every appearance of "Incorporated" in the COMPANY field will be replaced with "Inc."

Sum

Purpose:

Calculates the sum of the parameter / formula in the parameter.

Hint: Sum variables (see "Sum Variables") are an alternative way of creating sums and counters. Sum variables are principally applicable to whole tables. Aggregate functions principally table specific.

Parameter:

Number

Boolean — (optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

Sum (Order_Details.UnitPrice)

TableWidth

Purpose:

Returns the width of the table object. Can be used to define column widths relatively.

Parameter:

Boolean — (optional) True: the value is in SCM units (1/1000mm), False: the value is in project units (Default: False).

Return value:

Number

Example:

TableWidth()*30/100 Result: Column takes 30% of the width.

Tan

Purpose:

Calculates the tangent of the value.

Parameter:

Number	Value
Number	(optional) Mode (0=Degree, 1=Radian). Default: 0.

Return value:

Number

Example:

Tan (45) Result: 1,00

TextWidth

Purpose:

Returns the text width with the corresponding font.

Parameter:

String	Text
String	Font in the form of '{(0,0,0),12,0,0,0,0,400,0,0,0,0,40,0,0,0, Arial}' – the size in pt, followed by the values of the LOGFONT structure values.

Return value:

Number

Time$

Purpose:

Returns the current time in string format.

The following formats are available:

Placeholder	Description
%h	Hours in 24 hour format
%H	Hours in 12 hour format
%m	Minutes
%s	Seconds
%P	Display the part of day (A.M. / P.M.)

%p	Display the part of day (a.m. / p.m.)

Parameter:

String

Return value:

String

Example:

Time$("%02h:%02m:%02s") Result: "18:30:45"

Today

Purpose:

Returns the current date.

Parameter:

-

Return value:

Date

Example:

Date$(Today(),"%D, %m.%d.%4y") Result: "Friday, 10/9/2015"

ToFrac$

Purpose:

Converts an number to a fraction.

Parameter:

Number

Boolean optional: Create mixed fraction. Default: True.

Number optional: Maximum denominator (integer part) and maximum deviation (fractional part). Default: 10000.00001.

Number optional: Defines to what extent Unicode characters can be used fort he output. (0/1/2/3). Default: 2.

Return value:

String

Example:

ToFrac$(7.25,True,0.00001) Result: 7 1/4

Token$

See Case$

ToNumber

Purpose:

Returns the argument as number.

Parameter:

All

Return value:

Number

ToRTF$

Purpose:

Returns a string in RTF-format. This is necessary because some strings may contain one of the specially defined RTF-format symbols. ('\', '{' or '}'). For compatibility reasons, this function only processes the passed string if the optional second parameter is explicitly set to True.

Parameter:

String

Boolean

Return value:

String

Example:

If, for example, the field PRODCODE could contain one of the characters, then the text should be inserted in the following way:

"<<SALUTATION>> <<NAME>>, You have received our product <<PRODUCT>>, Code <<ToRTF$(PRODCODE)>>..."

ToString$

Purpose:

Returns the argument as string. The function supports all data types.

Parameter:

All

Rückgabewert:

String

Example:

A chart axis labels must be a string, the data type of the axis is variable (number, date, string).

Total$

Purpose:

Sets that the expression in the argument is calculated for the whole crosstable-object.

Parameter:

All

Return value:

All

Example:

Sum(Sales)/Total(Sum(Sales))*100

TotalPages$

Purpose:

Returns the total number of pages. The returned string is replaced by the total number of pages when printing.

Please note when using this function that the timing behavior of the print process can be affected. A progress bar may reach 100% faster, but because of further processing of the output, there may be a delay before the actual printout is produced. No calculations may be performed with the result of this function.

Parameter:

-

Return value:

String

Example:

"Page "+Page$()+"/"+TotalPages$() Result: Page 1/3

Translate$

Purpose:

Translates the text in the argument provided that it is held in the dictionary transferred by the application.

Parameter(s):

String

Return value:

String

Example:

Translate$("Page {0} of {1}", Page$(), TotalPages$())

Result in German e.g.: Seite 1 von 2

UnitFromSCM

Purpose:

Converts a SCM-Unit (1/1000 mm) to the print unit (inch/mm). Important for the definitions of property values independent of the selected print unit.

Parameter:

Number

Return value:

Number

Example:

Cond(Page()=1,UnitFromSCM(100000),UnitFromSCM(20000))

Result: 10 cm for Page 1, 2 cm for the other pages.

URLDecode$

Purpose:

Returns the URL conformable text as plain unformatted text.

Parameter:

String

Return value:

String

Example:

URLDecode$ ("www.combit.net")

URLEncode$

Purpose:

Returns the plain unformatted text as URL conformable content.

Parameter:

String

Boolean Encode reserved characters (!*'();:@&=+$,/?%#[]) also

Return value:

String

Example:

URLDecode$ ("www.combit.net")

Upper$

Purpose:

Converts the characters of a string to capital letters.

Parameter:

String

Return value:

String

Example:

Upper$("Otto") Result: "OTTO"

Val

Purpose:

The string is interpreted and returned as a number. If an error occurs, the return value is 0. The decimal sign must always be entered as ".".

Parameter:

String

Return value:

Number

Example:

Val("3.141")	Result: 3.141
Val("3,141")	Result: 3
Val("3.141e2")	Result: 314.2
Val(ChrSubst$("3,141", ",", "."))	Result: 3.141

Variance

Purpose:

Calculates the variance of the set of values that result from the first parameter / formula.

Parameter:

Number

Boolean (optional) TRUE: The values which were stored for the calculation are deleted after output. (default: TRUE). Please note that the stored calculation values are generally deleted for every (sub)table end. The second parameter only decides whether the values are already deleted within the table.

Return value:

Number

Example:

Variance(Order_Details.Quantity*Order_Details.UnitPrice)

WildcardMatch

Purpose:

Returns if the content matches one of the wildcard strings.

Parameter(s):

String String to check

String Wildcard string(s)

Boolean optional: Defines for passing multiple wildcard strings

Return value:

Boolean

Examples:

WildcardMatch ("1234xyz5678","*xyz*") Result: True

Woy

Purpose:

Returns the week number of a given date.

The optional second parameter determines the setting for the first week of the year.

0	Week with the first working day
1	Week of January, 1
2	First week with at least 4 days
3	First week with 7 days
4	Week with the first Monday

Parameter:

Date

Number (optional)

Return value:

Number

Year

Purpose:

Determines the year of a date and returns it as a number.

Parameter:

Date

Return value:

Number

Example:

Year(Today())	Result: 2015
Year(Date("1.1.2015"))	Result: 2015

Year$

Purpose:

Determines the year of a date and returns it as a string.

Parameter:

Date

Return value:

String

Example:

Year$(Today())	Result: "2015"
Year$(Date("1.1.2015"))	Result: "2015"

13. Overview of Properties

All of the properties for projects and objects are described centrally here.

Properties are defined by means of the respective property lists.

- Upon doing so, the properties can be sorted according to category or alphabetically via the corresponding buttons.
- Press the +- buttons to hide or show constant formulas (e.g. False).
- Use the input field to filter the properties.

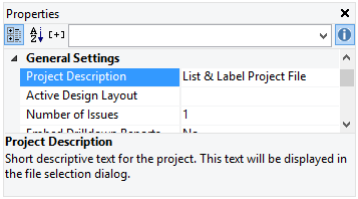


Figure 13.1: properties tool window

- If you select multiple objects, you can set their common properties at the same time.

You can specify values in different ways depending on the property.

- Open a drop down list of values by means of an "arrow down" button.

  Example: Appearance condition, font color, font. At the end of the list of values, you will almost always find the "Formula" entry.
- You can set the value with a formula via the formula button or the "Formula" entry in the list of values.

  Example: If you want to set the font color to red for negative values, set the default "property" for the font to "False" and define the "Font color" property using a formula, e.g.:

  Cond(Item.UnitPrice< 0,LL.Color.Red,LL.Color.Black)
- Open a configuration dialog with the "..." button.

  For example, there are dialogs for the following properties: formatting, font, frames, position, label format.
- Enter the value directly in the property fields.

  Example: Project description in the project properties.
- Set a file path with the open dialog.

  Example: Name of the project include file or the image file.

13.1 Project Properties

The project's property window is displayed if no object is selected in the workspace.

The project properties are also available as fields (see "Overview of Fields") and can be evaluated with the ProjectParameter$() function.

To copy the path of the currently opened project to the clipboard, right-click the "Project" item in the "Objects" tool window and select "Copy Project Path" in the context menu. This function is also available in the context menu of the workspace when no object is selected.

13.1.1 General Settings

Project Description

You can enter a description for the respective project in the "Project description" field. This description is then shown in the File > Open dialog making it easier for you to find the project that you want. Alternatively, you can also enter the description in the File > Save As dialog.

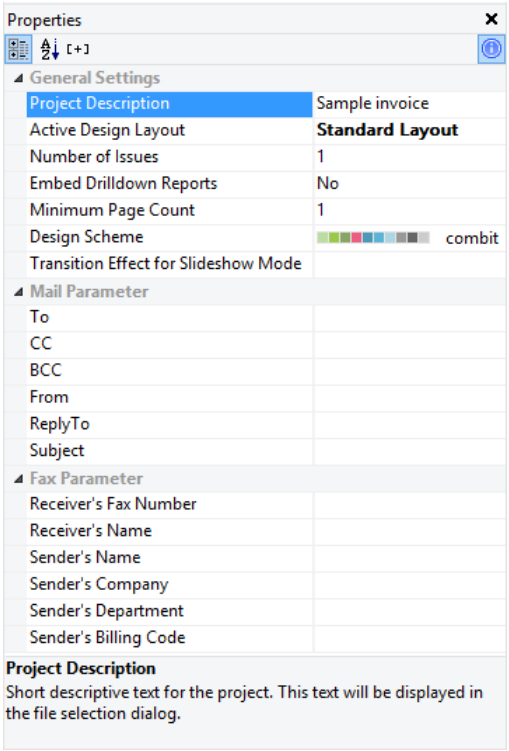


Figure 13.2: Project properties

Active Design Layout

With multi-page projects, it is sometimes a good idea to choose different layout settings, e.g. page size, orientation for the different pages. You specify which layout setting is to be shown in the workspace by means of the "Active design layout" field.

Number of Issues

Specifies the number of issues (copies) for printing and previewing. In addition, it also enables the IssueIndex() function for display and layout region conditions.

If you specify multiple issues, you will then have the "Display condition for issue print" property which you can use for printing of objects conditionally for the different copies.

Printing issues is only supported for the PDF export.

Display Condition for Issue Print

Allows print conditions to be set for the pages of the different issues, e.g. if the last page containing the GTC should be suppressed when printing the copy.

Example: If (IssueIndex()=2, not Lastpage(), True)

Design Scheme

It is possible to select a design scheme in order to quickly achieve optically appealing results. Diverse pre-defined schemes are available in the list. This option is the project-global pre-setting and is available in the objects via the "Project Design Scheme" item.

Under the "User Defined" option there is a "..." button available for users to specify a design scheme. This scheme is then provided in the objects via the "User Defined" option.

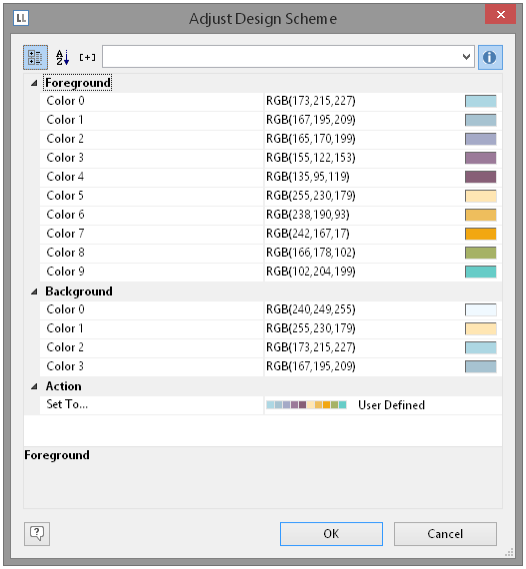


Figure 13.3: Adjust Design Scheme

Property	Description	Value	Description
Color Foreground	Ten scheme colors for the foreground: available in objects as LL.Scheme.Color0…9 The color can be defined freely using a color dialog, a selection list with predefined colors or using a formula or function ("Formula" option at the end of the list). Use the RGB() or HSL() function for a function.	... ⌄	Color dialog Selection of predefined colors and formula wizard
Color Background	Four scheme colors for the background: can also be selected in the objects as LL.Scheme.BackgroundColor0…3.	... ⌄	Color dialog Selection of predefined colors and formula wizard
Set To	If you select a design scheme here, the fore- and background colors are reset to the colors of the selected design scheme.	Liste	Scheme

Embedding Drilldown Reports

Drilldown reports can be embedded in the preview file to allow them to be sent or saved as a complete unit.

Minimum Page Count

With index card projects, this property specifies the minimum number of pages that are to be printed automatically. For example, if you want to output a four-page form with different layouts for each of the four pages, you create a layer for each page and position the objects on these layers as required for the output. Specify "4" as the minimum page count.

With list projects, the number entered here determines the page number on which the output of the table/report container will start. For example, if you need a covering sheet, you can assign the "Following pages" layer to the table and design the "First page" layer as you wish. Then specify "2" as the minimum page count.

Sort Order

For *label projects*, the sort order of data can be selected depending on the application.

Transition Effects for Slideshow

Here you specify the default values for the kind of page transition in the preview's slideshow mode.

13.1.2 Fax and Mail Variables

You send faxes by selecting the respective fax (printer) driver in the print process. A fax program must be installed in order to be able to send faxes.

If the fax is to be sent via the Windows fax driver, the fax parameters (at least the fax number) must be specified in the project properties. Enter the respective variables in the "Fax Parameters" area.

If the fax is to be sent via a different fax (printer) driver, you enter the fax number and other field information (as far as supported) by means of commands (e.g. DvISE commands for Tobit David). You enter these commands directly in a text field in the print project. Doing this suppresses the recipient dialog during printing because all information is already embedded in the document. You will find the precise procedure in the documentation for your fax software.

You can also send directly by email. You also define the required email variables in the project's property window. The mail settings (SMTP, MAPI, XMAPI) can be configured in the application.

13.2 Common Object Properties

You specify most of the object properties in the property list and/or in additional dialogs. Each object type has its own individual properties. However, there are a number of attributes that are common to all objects, such as size, position, name and, appearance condition. These properties are described here centrally and explained in more detail in the sections that follow.

13.2.1 Appearance Condition

You can assign an appearance condition to each object. This specifies under which conditions the object is to be printed. You will find a guide to defining such conditions under "Variables, Fields and Expressions".

Property	Description	Value	Description
Appearance condition	Appearance condition for printing. There is no output if the result is false. In appearance conditions for table footers, you can also use the predefined "Last page only" value. Internally, this entry uses the functions Lastpage() or LastFooterThisTable(). In appearance conditions for table headers, you can also use the predefined "First page only" value. Internally, this entry uses the functions not Lastpage() or FirstHeaderThisTable().	True False FirstHeaderThisTable() LastFooterThisTable() Formula	Always show Never show First page only Last page only Formula wizard

13.2.2 Background / Filling / Zebra Pattern

The background/filling property lets you specify a block color or a gradient.

Property	Description	Value	Description
Filling / Background	Select the kind of gradient that you want and specify the properties for color, mid color, end color and fading-in color, depending on background. Value 7 only with tables, charts, rectangles or circles.	0 1 2 3 4 5 6 7 8 Formula	Transparent Pattern/block color Horiz. gradient Vert. gradient Horiz. 2-part gradient Vert. 2-part gradient Partly transparent Picture Glass effect Formula wizard
Color	Font color		

13.2.3 Color

The "Color" property allows you to determine the font and background colors. For a background color, you will also need to set the "Background" property to a value >0, e.g. to "Sample/fixed color".

The color can be chosen from a fixed, predefined list of colors via a selection list or freely chosen via a formula or function. A dialog is available for defining the color.

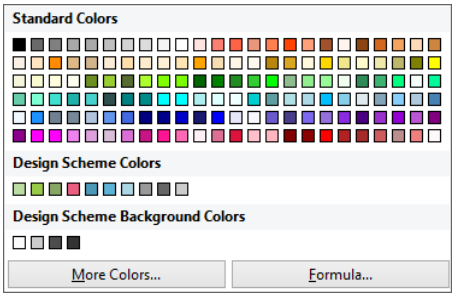


Figure 13.4: Color dialog

Property	Description	Value	Description
Color	You can define the color in a color dialog. In the dialog, you can choose the color from a list of fixed predefined colors or specify your own color by means of a formula or a function ("Formula" entry at the end of the list). (1) With the HSL() function, you define the color by specifying the hue value (0-360), the saturation value (0-1) and the lightness value (0-1). (2) The RGB() function defines a color by means of red, green and blue values. Each color portion can have a value between 0 and 255.		Color dialog Selection of predefined colors and formula wizard

13.2.4 Conditional Formatting

The Conditional Formatting property allows the font and background colors, the border, and the format to be modified. A dialog is available for editing the definitions.

You can add a new conditional formatting rule by clicking on the "New" button and then defining the rule. Depending on the field type, you can then choose between several predefined functions (text begins with/contains/is empty/is not empty, value

is empty/is not empty, value is greater/smaller than, value is greater/smaller or equal to, value is, value is NULL/not NULL, value is between ... and) or select the entry "Edit formula" and define the condition in the formula assistant. When doing so, use the field "LL.CurrentValue".

Then, depending on the field type, define the formatting (e.g. font, border, background color, format). For the font, you can choose the font color and various font types; you can define the borders, background color, and format via the respective properties dialogs you are already familiar with. Click on the arrow buttons to reset the corresponding settings to the defaults.

The conditions will apply in the order shown. You can modify the order using the arrow buttons. If you activate the "Stop" option for a particular condition, the subsequent conditions will be ignored when the condition applies.

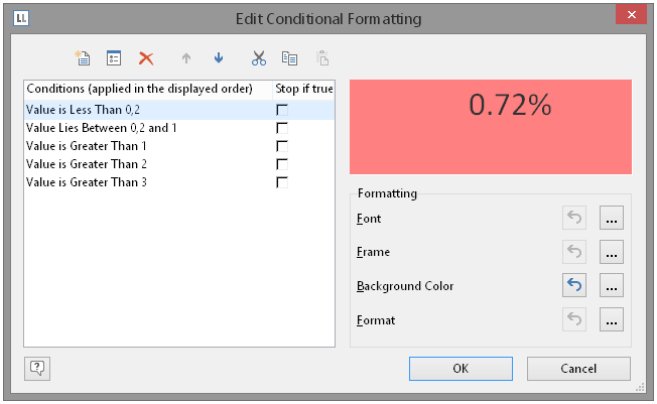


Figure 13.5: Conditional Formatting dialog

13.2.5 Content

Many objects cannot be defined solely by means of the property list. They contain sub-objects (or "content"), such as text objects consisting of several paragraphs.

The "Contents" property (if available) opens up a dialog. You will find a description of the respective content dialog accompanying the description of the individual objects.

13.2.6 Design Scheme

Specifies the selected design scheme. It is possible to select a design scheme in order to quickly achieve optically appealing results.

Property	Description	Value	Description
Design Scheme	Various predefined design schemes are available via the list. The entries "Project Design Scheme" and "User Defined" relate to the scheme definitions in the project		Selection of predefined schema.

	properties.

13.2.7 Display Condition for Issue Print

This option enables conditional printing of objects for the different issues. This property is only available if you have defined multiple issues in the project properties. The IssueIndex() function lets you specify the index of the issue, e.g. IssueIndex()=2. You will find more information about managing issues in chapter "Project Properties".

Property	Description	Value	Description
Display condition for issue print	Enables conditional printing of objects for the different issues, e.g. IssueIndex()=2.	True	Display
		False	Hide
		Formula	Formula wizard

13.2.8 Export as Picture

For exporting objects in picture format if a vector-based export does not give the desired results, or in order to achieve a better representation.

Property	Description	Value	Description
Export as picture	If the result is "True", the object will be exported as a picture.	True	Yes
		False	No
		Formula	Formula wizard

13.2.9 Font

If the **default value** is set to "Yes", the default font will be used.

There is also a dialog for defining the values.

Property	Description	Value	Description
Font	You can define the font properties in a dialog. If the **default value** is set to "True", the default font will used.		Font dialog
Default value	The default font will be used instead of the set values.	True	Default font
		False	No
		Formula	Formula wizard
Name	Selected font. All installed fonts will be displayed.	List	Font
		Formula	Formula wizard
Character set	Specifies the country version of the character	Number	Character set

	set. All available character sets are displayed.		
Size	Font size in points. Lists all available sizes for the selected font.	Number	Default size
		Formula	Formula wizard
Width	Sets the width of the font. 0 means standard width, otherwise the average character width will be specified.	Number	Width
		Formula	Formula wizard
Bold	Turns the "bold" text property on and off	True	Yes
		False	No
		Formula	Formula wizard
Italic	Turns the "italic" text property on and off	True	Yes
		False	No
		Formula	Formula wizard
Underline	Turns the "underline" text property on and off	True	Yes
		False	No
		Formula	Formula wizard
Strike out	Turns the "strike out" text property on and off	True	Yes
		False	No
		Formula	Formula wizard
Color	Font color		

13.2.10 Format

The format property is an alternative to formatting with the functions Date$() and Fstr$() in the formula dialog. This property can be found, for example, in text, crosstab and table fields. Note that the formatting will affect the expression's result. If you only wish to format certain parts of an expression (e.g. for text and numbers within one expression) use the functions Date$(), LocCurrL$ or Fstr$() in the formula dialog.

With the format editor you can set the format for numbers, currency, date, time, date and time, percentage, angle and date-/time difference.

By default, the respective application settings are used. Alternatively select the system setting or a custom setting. If no application setting is passed by the application, the application setting is the same as the system setting.

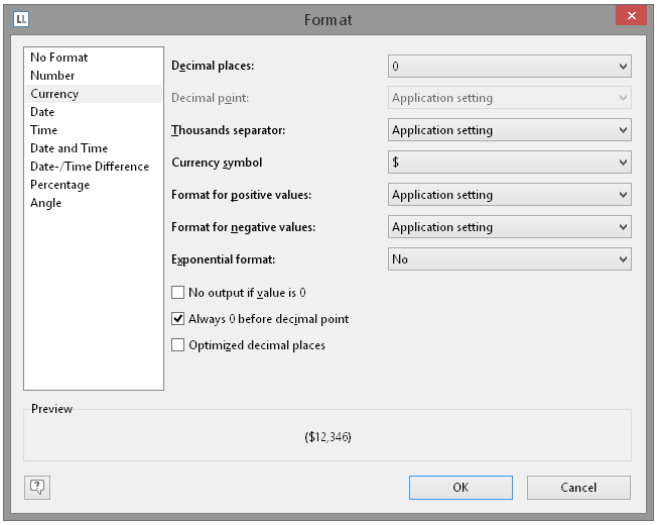


Figure 13.6: Formatting dialog

13.2.11 Frame

The "Frame" property group defines the frame properties and distances from the frames.

There is also a dialog for defining the values:

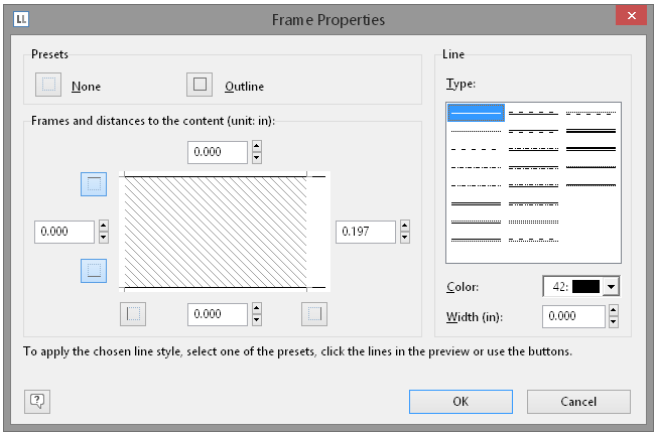


Figure 13.7: Dialog for the frame properties

Property	Description	Value	Description

Frame (default value)	You can define frame properties and distances in a dialog. To apply the selected type of line, color or width, click one of the default settings, the lines of the preview or use the buttons.	...	Frame dialog
Default frame setting (with table cells)	If set to True, the default frame defined in the table object will be used.	True	Lines
		False	No lines
		Formula	Formula wizard
Layout	Describes the layout of the frame lines (only relevant for multi-line frames).	0	Circumferen-tial
		1	Horiz. priority
		2	Vert. priority
		Formula	Formula wizard
Left/Top Right/Bottom	Settings for the respective frame line.		
Distance	Distance between content and frame.	Number	
		Formula	Formula wizard
Lines	Visibility of the frame line.	True	Lines
		False	No lines
		Formula	Formula wizard
Color	Line color		
Line type	Line type.	Line	Selection of predefined lines (20)
		Formula	Formula wizard
Width	Line width.	Number	
		Formula	Formula wizard

13.2.12 Index Level

It is possible to create an index via Project > Report Sections. The level of the entry and the corresponding text are defined with this option. These values are then

available in the project as fields "Reference.Level" and "Reference.Text". The maximum index depth can be defined via File > Options > Project.

Index depth	Specify the level in the index entry (0=not in Index).	Number formula	Formula wizard
Text	The text included in the index (can be tab-delimited if multiple entries are desired)	Text	Formula wizard

13.2.13 Locked

Locks the object to prevent it from being selected unintentionally by clicking. This property is only relevant during design and has no effect on the later print. If you set "Locked" to "True", the object in question can no longer be selected in the workspace and will be marked with a small red logo. This property is not available for sub-tables.

Note: You can select a locked object as usual in the object list thereby making it editable again. Since "locked" is only relevant during the project's design phase, there is no way in which you can determine the value of the property by means of a formula.

Property	Description	Value	Description
Locked	Locks the object and prevents it from being selected unintentionally by clicking in the workspace.	True	locked
		False	not locked

13.2.14 Name

When you add a new object to the workspace, a description of the object, made up of the type of the object (e.g. "Text") and its coordinates, appears in the right section of the status line. This is the default name for this object.

However, if your project has a large number of similar objects, these identifiers can easily become confusing. For this reason, you can give your objects meaningful names by means of the Objects tool window or with the object's property list. You do this by simply clicking once on the existing name and then changing it.

Alternatively, you can enter a new name in the object name input field via Objects > Object list or you can change it in the property list.

Property	Description	Value	Description
Name	Name of the object	Name	

If you have enabled the Options > Workspace > Object info option, the object name will also be shown in the tooltip that appears.

13.2.15 Page Break Before Outputting Object

Each object can trigger a page break before it is printed, i.e. the object begins on a new page.

Property	Description	Value	Description
Page break before	If the condition returns "True", a page break will be triggered before printing the object.	True	Break
		False	No break
		Formula	Formula wizard

13.2.16 Pattern

The pattern property lets you specify the texture of a color.

Property	Description	Value	Description
Pattern	Choose a pattern here from wide range of predefined patterns. Each pattern is represented by a number. You can specify your own pattern/number by means of a formula or a function ("Formula" entry at the end of the list). This property is only evaluated if "Filling" or "Background" is set to "Pattern/Block color".		Selection of a predefined pattern and formula wizard

13.2.17 Position

An object's "Position" property group specifies the x and y coordinates of the upper left corner of the object as well as the width and the height.

There is also a dialog for defining the values.

Property	Description	Value	Description
Position	Position and size of the object, all details are given in the unit of measure for the workspace		Position dialog
Left	Horizontal distance of the upper left corner of the object from the upper left corner of the workspace	Number	
		Formula	Formula wizard
Top	Vertical distance of the upper left corner of the object from the upper left corner of the workspace	Number	
		Formula	Formula wizard
Width	Width of the object	Number	
		Formula	Formula wizard
Height	Height of the object	Number	
		Formula	Formula wizard

13.2.18 Table of Contents Level

A table of contents can be created via **Project > Report Sections**. The level of the entry and the corresponding text are defined with this option. These values are then available in the project as fields "Reference.Level" and "Reference.Text". The maximum directory depth can be defined via File > Options > Project.

Table of Contents Level	Specify the level of the directory entry (0=not in the directory).	Number Formula	Formula wizard
Text	The text included in the index.	Text	Formula wizard

13.3 Text Objects

Text objects let you place text in the workspace. A text object can hold as many paragraphs as you want and they can all have completely different display properties. These paragraphs and their properties present the contents of the text object.

Text objects should always be created in the maximum size you want, the object shrinks at print time to the required size. This behavior is particularly useful for linking objects.

In the paragraph properties dialog, you can edit the individual paragraphs that make up the text object and fill them with content.

13.3.1 Object Properties

Also see chapter "Common Object Properties".

Property	Description	Value	Description
Bottom aligned	Bottom aligned within the object's border. If this option is enabled, the object's text will be output at the lower margin of the object, or otherwise at the upper margin. For this to be possible, the paragraphs must not be larger than the object otherwise the text will be truncated as usual at the bottom or wrapped. This option is very useful e.g. if text is to be output at the lower margin of a page and the length is not known.	True	Yes
		False	No
		Formula	Formula wizard
Rotation	Rotates the object anticlockwise. Please note that only TrueType fonts can be rotated.	0	0°
		1	90°
		2	180°
		3	270°
		Formula	Formula wizard

Page break	Specifies whether the object can trigger a page break. If this property is enabled, the content will be wrapped to the next page automatically if it exceeds the size of the object. This is an interesting option e.g. with text objects that are to cover several pages. With labels, the next label will only be started when all objects have been printed as a result of this option in the previous label. You might not be able to set this property if page breaks are not supported by the higher-level program.	True False Formula	Yes No Formula wizard

13.3.2 Paragraph Properties

Property	Description	Value	Description
Paragraph spacing	Distance to next paragraph ("Paragraph spacing"). You specify the distance in points: To achieve line spacing of 1.5 with a font size of 10 points, enter 5 points. Negative values are also allowed. You should always make the settings under Options > Objects > Object font.	Number Formula	 Formula wizard
Alignment	You can specify the alignment in the same way as in your text processing program.	0 1 2 Formula	Left Centered Right Formula wizard
Justified	Block text is justified both right and left. This property only takes effect if the line in question is wrapped at the end of the line. In other words, the line must be longer than the available space, it must consist of more than one word and the "Line wrap" option must be enabled. The last line is presented according to the "Alignment" property.	True False Formula	Yes No Formula wizard
Format	Please consider that the formatting relates to the result of the entire expression. Use the Date$() and Fstr$() functions in the formula wizard if you only want to format part of the expression (e.g. with text and number within an expression).	True False	Dialog
Blank optimization	The blank optimization option lets you remove unwanted blanks (leading, embedded and	True	Yes

	trailing). Consider the following situation: In a label project, you are printing a line with the variables <SALUTATION> <FIRSTNAME> <NAME> whereby the individual variables are separated by blanks in each case. If there is no salutation for a data record, this variable remains empty; the following blank would however be printed. First name and name would be shifted by one position (leading blank). If the "Firstname" variable is empty, there would be two spaces (embedded blanks) between "Salutation" and "Name". If all three variables were empty, both blanks would remain (trailing blanks). This means that the line is not empty and would therefore not be suppressed automatically. The "Blank Optimization" option helps in such cases. It can remove leading, embedded and trailing blanks automatically. Multiple embedded blanks are reduced automatically to a single blank.	False Formula	No Formula wizard
Inerasable	Lines that are completely empty are suppressed automatically. In this case, the following lines move upwards. This is normally correct but can be unwanted in some cases, e.g. when filling out forms. With the "Untraceable" option, the line in question remains, even if it is empty after inserting the variables.	True False Formula	Yes No Formula wizard
Line wrap	Sets the behavior if the text is too long for one line. 0: The content will be truncated at the end of the line. 1: The content will be wrapped. To prevent longer words from getting truncated, you can use the option "Force Wrap" to force a wrap after the last fitting character. 2: The content will be shrinked if needed, so that the paragraph can be displayed completely without a wrap.	0 1 2 3 4 Formula	Truncate Wrap Shrink Compress Optimal fit Formula wizard

	3: The character spacing will be decreased if needed so that the paragraph can be displayed completely without a wrap. 4: The font size will be increased or decreased until the paragraph is filling the object (vertical/horizontal). This option should only be used for the last paragraph as following paragraphs may be omitted. The options 2-4 should only be used to a certain extent to still guarantee the readability.			
	Page break	If the text object can trigger a page break (see object property "Pagebreak") you can use this property to define that the paragraph won't be separated in case of a pagebreak.	True False Formula	Break Keep together Formula wizard
	Force wrap	If a long word cannot be wrapped, a line break will be forced after the last suitable character.	True False Formula	Yes No Formula wizard
Line spacing	Line spacing defines the distance between the paragraph's individual lines. You specify the distance in points: To achieve line spacing of 1.5 with a font size of 10 points, enter 5 points. Negative values are also allowed. You should always make the settings under Options > Objects > Object font.		Number Formula	 Formula wizard

13.4 Line Objects

You define lines by their alignment, width and type.

13.4.1 Object Properties

Also see chapter "Common Object Properties".

Property	Description	Value	Description
Alignment	Bottom aligned within the object's rectangle. If you hold down the SHIFT key when changing the size with the mouse, the line will be aligned either vertically or horizontally.	0 1 2 3	Diagonal \ Diagonal / Horizontal Vertical

		Formula	Formula wizard
Width	Width of line in the unit of measure of the workspace. 0 means 1px.	Number	
		Formula	Formula wizard
Line type	Line type selection.	0, 1, 3, 4	4 predefined lines
		Formula	Formula wizard

13.5 Rectangle Objects

You define rectangles by their border, rounding and shadow.

13.5.1 Object Properties

Also see chapter "Common Object Properties".

Property	Description		Value	Description
Border	Here you specify whether the rectangle is to have a border.		0	Transparent
			1	Pattern/color
			Formula	Formula wizard
	Color	Color of the border.		
	Width	Width of the border in the unit of measure of the workspace	Number	
			Formula	Formula wizard
Rounding	Rounding factor for the corners of the rectangle in % of the short edge of the rectangle. 0% means square cornered; 100% means: the short edge of the rectangle is completely round (elliptical).		Number	
			Formula	Formula wizard
Shadow	Here you define whether the rectangle is to have a shadow.		0	Transparent
			1	Pattern/color
			Formula	Formula wizard
	Pattern	Shadow pattern.		
	Color	Shadow color.		

	Width	Width of the shadow in the unit of measure of the workspace.	Number	
			Formula	Formula wizard

13.6 Circles and Ellipses

You define circles and ellipses by their borders and filling.

13.6.1 Object Properties

Also see chapter "Common Object Properties".

Property	Description		Value	Description
Pie (Flat)	This property lets you specify that the ellipse is always displayed as a circle (centered in the object rectangle). This property can be set when dragging by holding down the SHIFT key (smaller axis), CTRL key (larger axis) or SHIFT and CTRL keys (False).		True	Yes
			False	No
			Formula	Formula wizard
Border	Here you define whether the ellipse is to have a border.		0	Transparent
			1	Pattern/color
			Formula	Formula wizard
	Color	Color of the border.		
	Width	Width of the shadow, in the unit of measure of the workspace.	Number	
			Formula	Formula wizard

13.7 Picture Objects

Picture objects are used to display the content of fixed files or variables.

The following formats are available: WMF, EMF, BMP, DIB, PCX, SCR, TIFF, GIF, JPEG, PCD, PNG and ICO. As a general rule, you should use the RGB color space (not CYMK). Transparency in PNG files is supported by using the corresponding Windows functions. In our experience the majority of printer drivers do not support transparency so that reports with e.g. partly transparent PNG files should thoroughly be tested on the actual hard-software combination. If that is not possible we recommend doing without the alpha channel.

If the image is held in a file or a variable, you can select the data source by double-clicking the object.

13.7.1 Object Properties

Also see chapter "Common Object Properties".

Property	Description		Value	Description
Data source	Select the method of determining the image data source, i.e. via file name, formula or variable name.		File name Formula Variable	 Formula wizard
	File name	Fixed file name: is evaluated if you have selected "File name" as the data source property. You then select the image file that you want by means of the file selection dialog. In this dialog, you can also insert the picture into the project by enabling the ("Embed image in project file" checkbox option. This option copies the image to the project thus making it available even without the external file. In this case, "(embedded)" will be shown as the file name.		Open file dialog
		Relative path — The path is relative to the project path.	True False	Yes No
	Formula	If you have selected "Formula" as the data source property, the file name is derived from a formula. The formula must return a "picture" value type. You can also enter a valid file name. However, this must first be converted to the "picture" type with the Drawing() function.	Formula	Formula wizard
	Variable	If you have selected "Variable" as the data source property, the file name is taken from a variable. Select the variable that you want from the drop-down box. The drop-down box lists all "picture" variables defined in	Variable	

		your application.		
	Properties	Depending on your application, a dialog may open up at this point to allow you to define more properties.	Aa	Opens dialog
	Save as JPEG	Print the image as a JPEG file if possible (not all file types support this option).	True False Formula	Yes No Formula wizard
Original size		Specifies whether the picture is to be drawn in the original size (if it can be determined), or if the size of the picture's frame is to be adjusted to fit.	True False Not defined	Yes No Not defined
	Keep proportions	With this option you can specify whether the height/width proportions are to be kept (True) when inserting the picture or if the picture's frame is to be adjusted, possibly leading to distortion (False).	True False Formula	Yes No Formula wizard
	Alignment	Describes how the image is to be arranged in the available area.	0 1 2 3 4 5 6 7 8 9	Centered Next to each other (tiled) Left top Left bottom Right top Right bottom Left Right Top Bottom

13.8 Barcode Objects

Barcodes can be used for product stickers, price labels, serial numbers and many other purposes. A barcode normally consists of a series of bars and spaces in different thicknesses whereby, depending on the code, the spaces between the bars also hold information.

13.8.1 Object Properties

Also see chapter "Common Object Properties".

Property	Description		Value	Description
Bar width	The narrowest bar width in SCM units (1/1000 mm). 0 = automatic adjustment. Not supported by all barcodes.		Formula	Formula wizard
	Orientation	Orientation of the barcode within the object's frame	0	Left
			1	Centered
			2	Right
			Formula	Formula wizard
Bar color	Color of the selected barcode.			
Rotation	Rotates the object anticlockwise		0	0°
			1	90°
			2	180°
			3	270°
			Formula	Formula wizard
Optimum size	Sets the optimum size for the barcode. This property has an effect when the size changes and can be used with the following formats: EAN 13 (all), DP-Leitcode, DP-Identcode, German Parcel, Postnet and FIM.		True	Yes
			False	No
			Formula	Formula wizard
Font	Font for the barcode text. Is only evaluated if the "Show text" property is enabled.		Aa	Font dialog
Bar width ratio	The relationship of the different widths of bars or spaces. Not supported by all barcodes.		Formula	Formula wizard
Show text	This property lets you specify whether the content of the barcode is to be printed as text.		True	Yes
			False	No
			Formula	Formula wizard

13.8.2 Barcode Content

The content dialog for the barcode object lets you define the barcode more precisely.

- Choose "Text" if you want to print fixed text as a barcode. Enter the value to be printed in the first part of the input field. Choose the type of barcode that you want in the second field.

- There are additional configuration options for many barcodes, e.g. Maxicode. You can edit these options in a further dialog.
- Choose "Formula" if you want to use a formula as a barcode, and define a valid formula expression with the "Edit" button. The formula must return a "barcode" value type. You can, of course, also enter variables. However, they must first be converted to the "barcode" type with the Barcode() function.
- Choose "Variable" if you want to print a variable as a barcode. In the drop-down box, you can choose from all available barcode variables.

13.8.3 Supported Barcode Formats

A range of barcode formats are supported. There is normally no need for special printers, fonts etc. – the barcodes are printed directly.

Overview of the General 1-D Codes

Name	Formats and permitted characters	
GTIN-13, EAN-13, UCC-13, JAN-13	Formats:	
	cc|nnnnn|aaaaa	(normal EAN13)
	cc|nnnnn|aaaaa|xx "ISSN")	(EAN13 for newspapers,
	cc|nnnnn|aaaaa|xxxxx	(EAN13 for books, "Bookland")
	ppp|nnnn|aaaaa	(normal EAN13)
	ppp|nnnn|aaaaa|xx "ISSN")	(EAN13 for newspapers,
	ppp|nnnn|aaaaa|xxxxx	(EAN13 for books, "Bookland")
	with	cc = country code
		ppp = product code
		nnnn, nnnnn = country code
		aaaaa = article code
		| = character code chr(124)
		xx, xxxxx = supplemental code
	Permitted characters: [0-9]	
	The check digit will be calculated and attached automatically. Each character is 7 bar-widths wide, a code should have a minimum width of (12*7+11)*0.3 mm = 2.85 cm.	
	Ideal size (bar symbol) nominal size SC2:	

	Width: 31.4 mm, Height: 24.5 mm Minimum offset that should be kept free around the symbol: left: 3.6 mm, top: 0.3 mm, right: 2.3 mm, bottom: 0.0 mm The text may partially exceed this area.
EAN-14, UCC-14	Format: nnnnnnnnnnnnnn (14 digits) Permitted characters: [0-9]
GTIN-8, EAN-8, UCC-8, JAN-8	Formats: nnnnnnn, nn|nnnnn (| = character code chr(124)) Permitted characters: [0-9] Each character is also 7 bar widths wide, a code should then have a minimum width of (8*7+11)*0.3 mm=2.01 cm. Ideal size (bar symbol) nominal size SC2: dx : 22.1 mm, dy: 19.9 mm Minimum offset that should be kept free around the symbol: left: 2.3mm, top: 0.3mm, right: 2.3mm, bottom: 0.0mm (if printed, otherwise 0.3 mm) The text may partially exceed this area.
UPC-A	Format: c|nnnnn|aaaaa, cnnnnnaaaaa with c = number system nnnnn = company code aaaaa = article code | = character code chr(124) Permitted characters: [0-9] The check digit will be calculated and attached automatically. Each character is also 7 bar widths wide, a code should then have a minimum width of (13*7+6)*0.3 mm=2.88 cm.
UPC-E	Format: c|nnnnnn, nnnnnnn with c = number system |= character code chr(124) nnnnn = code, interpretation depends on the last position Permitted characters: [0-9] The check digit will be calculated and attached automatically. Each character is also 7 bar widths wide, a code should then have a

	minimum width of (13*7+6)*0.3 mm=2.88 cm
2-of-5 Industrial	Format: any Permitted characters: [0-9] A code is (14*number of characters+18) bar widths wide.
2-of-5 Interleaved (ITF)	Format: any, must have an even number of characters Permitted characters: [0-9] A code is (9*number of characters+9) bar widths wide.
2-of-5 Matrix	Format: any Permitted characters: [0-9] A code is (10*number of characters+18) bar widths wide.
2-of-5 Datalogic	Format: any Permitted characters: [0-9] A code is (10*number of characters+11) bar widths wide.
Codabar	Format: fnnnnnf Permitted characters: f = frame code [A-D], n = [0-9], [-$:/.+] Every character is either 2*3+6*1 (characters '0'..'9', '-', '$') or 3*3+5*1 (characters ':', '/', '.', '+', 'A'..'D') bar widths wide. The characters for the frame code will not be printed with the text.
CODE11	Format: any Permitted characters: [0-9],[-] Code 11 has, depending on the length, 1 or 2 check digits. It calculates only 1 instead of 2 check digits if the length of the text is a maximum of 10 characters.
Code39, 3-of-9, Alpha39	Format: any Permitted characters: [A-Z], [0-9], [-./$%+*]
Extended code 39	Format: any Permitted characters: any The expanded code can be activated by a combination of the standard code: for example: '+A' -> 'a'. Every character is 16 bar widths wide, a text has (16*number of characters –1) bars.
Code 39 with CRC	Format: any Permitted characters: [A-Z], [0-9], [-./$%+*]
Code 93 (simple and extended)	Code 93 is an extension of Code 39 and covers the complete 128 bytes of the ASCII Allowed characters, including NULL. This must

	be transferred as chr$(255). It contains two check digits that are automatically generated. The characters consist of 9 bar widths, that each have 3 bars and 3 spaces. There are two options for the extended code: a) transfer of the shift character from the host program as $ chr$(254) % chr$(253) / chr$(252) + chr$(251) b) transfer of the desired character, L&L adds the appropriate shift character.
Code128	Format: any Permitted characters: any Determine the code set that should be used: Use one of the following codes as a start character: chr$(135) – start with code A chr$(136) – start with code B chr$(137) – start with code C In order to switch between different code sets within the barcode, you can use the usual control characters: Starting from code A to B: chr$(132) C: chr$(131) Starting from code B to A: chr$(133) C: chr$(131) Starting from code C A: chr$(133) B: chr$(132) *Example:* <Subset B> "RL" <Subset C> "04432476" <Subset B> "0DE110" Barcode(Chr$(136)+"RL"+chr$(131)+"04432476"+chr$(132)+"0DE110", "Code 128")

Code128-Full	Unlike the "normal" Code128, this code allows the use of the entire Latin-1 character set. Special characters must be replaced as follows: NUL: chr$ (256) FNC1: chr$ (102+32) FNC2: chr$ (97+32) FNC3: chr$ (96+32)
EAN128-Full	Unlike the "normal" EAN128, this code allows the use of the entire Latin-1 character set. The special character FNC1 after the start character unambiguously defines the EAN128. Special characters must be replaced as follows: NUL: chr$ (256) FNC1: chr$ (102+32) FNC2: chr$ (97+32) FNC3: chr$ (96+32)
GS1 128, EAN128	The special FNC1 character following the start character uniquely defines the EAN128 code. Special characters must be replaced as follows: NUL: chr$ (255) FNC1: chr$ (254) FNC2: chr$ (253) FNC3: chr$ (252) FNC4: chr$ (251)
GS1 DataBar (Limited, Stacked, Stacked Omnidirectional, Stacked Truncated)	Format: nnnnnnnnnnnnn (13 digits) Permitted characters: [0-9]
GS1 DataBar Expanded)	Format: Data begins with AI. Max. 74 numeric/41 alphanumeric characters Permitted characters: any
IM (4CB/4-CB/USPS4CB)	Intelligent Mail Barcode (US Postal Services). Alternative name: One Code Solution or 4-State Customer Barcode). Format: 20, 25, 29 or 31 digits Permitted characters: [0-9]
ISBN	Format: nnn|nnnnnnnnnn (12-digit, no check digit) Permitted characters: [0-9]

MSI	Format: any Permitted characters: [0-9], [A-F]
Pharma-Zentral-Nummer	Format: nnnnnn (6 digits) Permitted characters: [0-9]
Pharma-Zentral-Nummer (neu)	Format: nnnnnnn (7 digits) Permitted characters: [0-9]
SSCC/NVE	Format: {nn}nnnnnnnnnnnnnnnnn (17 or 19 digits) Permitted characters: [0-9]

Overview of the General 2-D Codes

Name	Formats and permitted characters
Aztec	Format: any. Note the options dialog. Permitted characters: any
Datamatrix	In order to enter non-printable characters (binary data) in the barcode text, they must be packaged in a special string. The data is inserted using the ~dNNN string, whereby NNN stands for ASCII-Code. Example: DEA~d065~d015~d000~d247~d220 (~d065 stands for "A") To represent an EAN data matrix, you can code the special FNC1 character as ~1. The Datamatrix symbology uses the ECC 200 error correction code. Further options like size, module format and encoding can be set in the barcode's options dialog. Click the options symbol in the barcode content dialog to enter this dialog.
PDF417	Can display all available and non-printable characters. Note the options dialog. In order to enter non-printable characters (binary data) in the barcode text, they must be packaged in a special string. The data is inserted using the "{binary:nn}" string, whereby nn stands for any sequence of two-character hexadecimal numbers. This is especially important if Maxicodes are to be created according to UPS specifications; the special characters needed for this can be entered in this way: In order to pack a Null and a Backspace (BS) character in the data, use "{binary:0008}" (corresponds to "{binary:00}{binary:08}"). Use "Hallo{binary:0d0a}World" to include a line break.

QR Code	Format: any. Note the options dialog. Permitted characters: all characters In order to enter non-printable characters (binary data) in the barcode text, they must be packaged in a special string. The data is inserted using the ~dNNN string, whereby NNN stands for ASCII-Code. Example: ~d065 stands for the letter "A".

Overview of Post Codes (1-D and 2-D Codes)

Name	Formats and permitted characters
DP-Identcode	Formats: nn.nnnnnn.nnn, nn.nnnnn.nnnn, nn.nnnn.nnnnn, nn.nnn.nnnnnn Permitted characters: [0-9] A code is (9*number of characters+9) bar widths wide. Width: 32.0 mm - 58–5 mm (at least 5 mm light zone right and left). Height: 25 mm. Check digit is calculated automatically; relation: 4:9; special “2 of 5 IL” code.
DP-Leitcode	Format: nnnnn.nnn.nnn.nn Permitted characters: [0-9] A code is (9*number of characters+9) bar widths wide. Width: 37.25 mm - 67-5 mm (at least 5 mm light zone right and left). Height: 25 mm. Check digit is calculated automatically; relation: 4:9; special “2 of 5 IL” code.
FIM	Formats: A, B, C Permitted characters: [A-C] Minimum size: 1/2" * 5/8". The FIM barcode is always printed in the size specified by the US Postal Office. This means that it might extend beyond the available object border.
German Parcel	Format: any, must have an even number of characters. Permitted characters: [0-9] A code is (14*number of characters+18) bar widths wide. Relation: 1:2

Japanese Postcode	Japanese Postcode. Format: Postcode as nnn-nnnn, then max. 13 character address Permitted characters: n=[0-9], address=[A-Z], [0-9], [-]
Maxicode	Can display all available and non-printable characters. Note the options dialog. In order to enter non-printable characters (binary data) in the barcode text, they must be packaged in a special string. The data is inserted using the "{binary:nn}" string, whereby nn stands for any sequence of two-character hexadecimal numbers. This is especially important if Maxicodes are to be created according to UPS specifications; the special characters needed for this can be entered in this way. Example: in order to pack a Null and a Backspace (BS) character in the data, use "{binary:0008}" (corresponds to "{binary:00}{binary:08}"). Example: use "Hallo{binary:0d0a}world" to include a line break.
Maxicode/UPS	Format: Formatting according to UPS specifications. Note the options dialog. Permitted characters: all characters
Postnet	Formats: nnnnn, nnnnn-nnnn, nnnnn-nnnnnn Permitted characters: [0-9] Minimum size: 1.245" * 4/16" (10-digits). Bar distance at least 1/24". Error correction digit will be appended automatically. This bar code is automatically printed in the right size if the object is larger than the maximum size of the barcode.
Premiumadress	Mail Barcode of Deutsche Post (German postal services). Format: According to DPAG specifications. Note the options dialog. Permitted characters: According to DPAG specifications.
RM4SCC, KIX®	Permitted characters: [A-Z], [0-9], [a-z]
Royal Mail with CRC	Permitted characters: [A-Z], [0-9], [a-z] Format: Either just the post code is coded (e.g. LU17 8XE) or the post code with a supplementary "Delivery Point" (e.g. LU17 8XE 2B). The maximum number of characters that can be used is therefore limited to 9.

13.9 Report Container Object

A report container can hold multiple table objects, cross tab objects and chart objects.

13.9.1 Object Properties

Also see chapter "Common Object Properties".

Property	Description	Value	Description
Page break before	If the condition returns "True", a page break will be triggered before printing the report container.	True	Break
		False	No break
		Formula	Formula wizard
Default font	Default font setting for the elements.	Aa	Font dialog
Frame	Frame properties and spacing.	...	Dialog
		Number	
		Formula	Formula wizard
Column count	Number of columns in the container. Note: the "LL.CurrentTableColumn" field returns the index of the current column.	1	1-column
		2	2-column
		3	3-column
		4	4-column
		5	5-column
		Formula	Formula wizard
	Distance — Spacing of the columns in the container.	Number	
		Formula	Formula wizard

13.9.2 Element Properties

To display the properties of the elements, mark the element in the "Objects" tool window.

Also see chapter "Common Object Properties".

Property	Description	Value	Description
Name	Name of the element (stored in the "LL.CurrentContainerItem" variable).	Name	
Separator ticks	To align (sub) tables exactly with one another, additional tick marks can be shown	True	Yes

(only tables)	on the ruler.	False	No
Spacing (only charts, gantt and crosstabs)	Distance of the object (including frame) from the report container's print area.		
Distance After	Distance to the following element (omitted if the element ends at the page end).	Number	
		Formula	Formula wizard
Distance Before	Distance from the previous element (not required if the element starts at the beginning of the page.	Number	
		Formula	Formula wizard
Output height (only charts)	Height of the object (including frame).		
Sort order (only tables, gantt and charts)	Multi-level sort orders can be defined in a dialog (if supported by the application), e.g. sort the data by country first and then by city.	...	Dialog
	Single-level sort orders can be selected from the drop down list.	⌄	List
Pagebreak before	If the condition returns "True", a page break will be triggered before printing the object. If you have multiple multi-column objects, a page break is triggered automatically after an object if the column counts for the objects are different (e.g. 2-column table followed by a 3-column table) and if there would be insufficient room for the following object.	True	Break
		False	No break
		Formula	Formula wizard
Column count	Number of columns in the object. If you have multiple multi-column objects, a page break is triggered automatically after an object if the column counts for the objects are different (e.g. 2-column table followed by a 3-column table) and if there would be insufficient room for the following object. Note: The "LL.CurrentTableColumn" field returns the index of the current column.	0	Container default
		1	1-column
		2	2-column
		3	3-column
		4	4-column
		5	5-column
		Formula	Formula wizard
	Distance — Spacing of the columns in the object.	Number	
		Formula	Formula wizard

	Column break condition (only tables)	A column break will be triggered if the result of the condition is "True".	True	Yes
			False	No
			Formula	Formula wizard
	Column break before	A column break will be performed before the object is output.	True	Yes
			False	No
			Formula	Formula wizard

13.10 Table Objects

Table objects are elements of the report container.

13.10.1 Object Properties

Also see chapters "Common Object Properties" and "Report Container Object".

Property	Description		Value	Description
Fixed size (not available for sub-tables)	The "Fixed height" property lets you specify that the size of the table is not to be adjusted automatically when it has fewer data lines than the available space in the table object, after the field names are replaced with content. If the property is disabled, the end of the table moves upwards automatically. If a footer line is defined, "fixed size" will cause it to be separated from the rest of the table by a space of at least one line. This space accommodates the frame as defined in the data line definition 1. Otherwise, the footer line will appear immediately below the table. Please consider that any objects interlinked with the table can only adjust their position automatically to correspond with changes in the table size if "fixed size" is disabled.		True	Yes
			False	No
			Formula	Formula wizard
	Separators fixed	If this property is enabled, the separators are also drawn through the empty area of the table between the last data line and the footer line. If the option is disabled, the separators are only drawn as far as the last data line. This property is only available with	True	Yes
			False	No
			Formula	Formula wizard

	"fixed size" tables.			
Background	Color and type of the background of the table. (Only available in the report container for certain applications).			
Default frame	Default value for the table's frame.			
Default font	Default value for the table's font (not available for sub-tables).		Aa	Font dialog
Pagebreak condition	With this property, you can specify a condition that causes a page break after a data line as soon as the condition is met. If "Pagebreak condition" is set to “True”, a page break will be triggered after each line. “False” specifies that a page break is only to be triggered when necessary.		True False Formula	Yes No Formula wizard
Column count	Number of columns in the table. Note: The "LL.CurrentTableColumn" field returns the index of the current column.		0 1 2 3 4 5 Formula	Container default 1-column 2-column 3-column 4-column 5-column Formula wizard
	Distance	Spacing of columns in the table.	Number Formula	 Formula wizard
	Column break condition	If the result is "True" when a data line is output, a column break will be triggered.	True False Formula	Break No break Formula wizard
	Column break before	A column break will be performed before the object is output.	True False Formula	Break No break Formula wizard
Pagebreak before	If the condition returns "True", a page break will be triggered before printing the object. If you have multiple multi-column objects, a		True False	Break No break Formula

	page break is triggered automatically after an object if the column counts for the objects are different (e.g. 2-column table followed by a 3-column table) and if there would be insufficient room for the following object.		Formula	wizard
Data lines				
	Suppress	When you enable the "Data lines.Suppress" object property in tables, all data lines are completely suppressed. This option is particularly useful in combination with the "Force Sums" option. The latter option specifies that totals are also calculated when a data line is not printed. By combining both options and using groups and sum variables, you can print more interesting statistics.	True False Formula	Yes No Formula wizard
	Force sums	Sum variables are calculated even if you suppress data lines.	True False Formula	Yes No Formula wizard
	Zebra pattern	The "Zebra pattern" option in the "Data line" field specifies whether data lines are to have alternating background colors. This can improve readability, especially with large tables.		
	Keep rows together	In the event of a page break, data lines are kept together as far as possible, i.e. they are printed together on the next page.	True False Formula	Yes No Formula wizard
Footer lines				
	Keep rows together	In the event of a page break, footer lines are kept together as far as possible, i.e. they are printed together on the next page.	True False Formula	Yes No Formula wizard
Group footer				

lines				
	Also empty groups	Output group footer lines even if the groups are empty.	True False Formula	Yes No Formula wizard
	Keep rows together	In the event of a page break, group footer lines are kept together as far as possible, i.e. they are printed together on the next page.	True False Formula	Yes No Formula wizard
Group header lines				
	Keep together	Where possible, a group header line will not be separated from the following data line because of a page break.	True False Formula	Yes No Formula wizard
	Keep rows together	In the event of a page break, group header lines are kept together as far as possible, i.e. they are printed together on the next page.	True False Formula	Yes No Formula wizard

13.10.2 Special Functions

Function	Purpose
FirstHeaderThisTable()	Returns whether the header of the table is being output for the first time.
LastFooterThisTable()	Returns whether the footer of the current table is being output for the last time.
RemainingTableSpace()	Returns the space available to data and group lines in a table object.
TableWidth	Returns the width of the table object. Can be used to specify relative column widths.

13.10.3 Line Properties

Also see chapter "Common Object Properties".

Property	Description	Value	Description
Show in	With this property, you can hide lines in the workspace – this is very useful if you have a	True	Yes

Designer	Iot of line definitions.		False	No
			Formula	Formula wizard
Default font	You can set the default font for the entire table row. Newly inserted columns are created with this font.		Aa	Font dialog
Anchor to row	Index (1-based) of the row, whose position will be anchored with the starting position of the selected row. 0=no anchoring. This function is not supported by all export formats.		Number	Formula wizard
	Anchor	Describes if the line is printed at the start or the end of a reference line.	True	Top
			False	Bottom
Spacing	Here you define the top, bottom, right and left spacing of the line. The "top" or "bottom" values result in a corresponding space between the individual table rows. With the "left" and "right" spacing values, you can specify the margin in relation to the table object, i.e. you can indent lines or columns.		Formula	Formula wizard

13.10.4 Group Line Properties

Group lines have the following additional properties:

Property	Description	Value	Description
Group sums	The selected sum variables are set to "0" when the condition for the group line is met. This setting is useful to create so-called group sub-totals, for example to add up the prices of all articles in a particular article group.	...	Dialog
Group by	This expression represents a key. Whenever the result of the expression changes, a group change is triggered.	Formula	Formula wizard
Repeat as header	Outputs the group header again after a page break.	True	Yes
		False	No
		Formula	Formula wizard
Break before	A page break will be triggered before outputting the group header, i.e. each group begins on a new page. If several group lines are printed with this option at the same time, they will appear one after the other on the	True	Yes
		False	No
		Formula	Formula wizard

	new page. The RemainingTableSpace() function lets you perform conditional breaks before outputting group headers, e.g. "If there are only 2 inches left on the page then break before outputting the object". You will find more information in chapter "Overview of Functions".		
Break after	A page break will be triggered after outputting the group footer lines, i.e. each group begins on a new page.	True False Formula	Yes No Formula wizard

13.10.5 Column Properties

The column properties correspond with the properties of the respective object type, with some table-related restrictions.

Text and RTF text columns are special cases. A column property lets you switch between these two text variations later on. The property list also changes accordingly depending on this property.

Also see chapter "Common Object Properties".

Property	Description	Value	Description
Options (only with some field types)	Opens the "Content" dialog for the relevant object type.		Content dialog
Drilldown links	Opens the dialog for editing the drilldown links. A drilldown report can also be started from the preview.		Drilldown dialog
Link	Link that is accessed when you click the object (in the real data preview, with PDF or HTML export). Example: file://c:\users\public\x.log or URL	Link Formula	 Formula wizard
Save as JPEG (only with pictures)	Print the image as a JPEG file if possible (not all file types support this option).	True False Formula	Yes No Formula wizard
Rotation	Rotates the object anticlockwise. For example, you can rotate the column title or barcode by 90° with this function.	0 1 2 3	0° 90° 180°

			Formula	270° Formula wizard
Format	Please consider that the formatting relates to the result of the entire expression. Use the Date$() and Fstr$() functions in the formula wizard if you only want to format part of the expression (e.g. with text and number within an expression).		True False	Dialog
Bar width (only with barcodes)	The narrowest bar width in SCM units (1/1000 mm). 0 = automatic adjustment. Not supported by all barcodes.		Formula	Formula wizard
	Orientation	Orientation of the barcode within the object's frame	0 1 2 Formula	Left Centered Right Formula
Bar color (only with barcodes)	Color of the barcode.			
Bar width ratio (only with barcodes)	The relationship of the different widths of bars or spaces. Not supported by all barcodes.		Formula	Formula wizard
Show text (only with barcodes)	This property lets you specify whether the content of the barcode is to be printed as text.		True False Formula	Yes No Formula wizard
Background	The background of the columns.			
Text format	For presenting the text column differently.		True False	Normal text RTF Text
Sort Orders (only header)	Sort orders (ascending+descending) for interactive switching in the preview. Stacked sort orders can be defined via a dialog (requires application support), e.g. the data is first sorted by country, and then according to city/town. Single-tiered sort orders can be selected via the list.		... ⌄	Dialog List

Alignment (pictures)	Describes how the image is to be arranged in the available area.		0	Centered
			1	Next to each other (tiled)
			2	Left top
			3	Left bottom
			4	Right top
			5	Right bottom
			6	Left
			7	Right
			8	Top
			9	Bottom
Vert. Alignment (barcodes)	Vertical alignment of the content in the available space.		0	Top
			1	Centered
			2	Bottom
			Formula	Formula wizard
Alignment (text)	Text alignment. Decimal means that numbers are aligned by their decimal points.		0	Left
			1	Centered
			2	Right
			3	Decimal
			Formula	Formula wizard
	Decimal position	The position of the decimal point within the field, measured from the left edge of the previous frame.	Number	
			Formula	Formula wizard
Justified	Text is aligned to the right and the left (block text).		True	Yes
			False	No
			Formula	Formula wizard
Width	The width of the column. You will get an error message if the sum of the column widths exceeds the total width of the table object.		Number	
			Formula	Formula wizard
Fit	Specifies the behavior if the text is too long for one line.		0	Truncate

	To prevent long words from being truncated with value "1" (wrap), you can use the "Force wrap" option to ensure that a break occurs after the last suitable character. Value "3" (compress) reduces the character spacing and should only be used to a limited extent in order to guarantee legibility.		1 2 3 Formula	Wrap Shrink Compress Formula wizard
	Widow/ Orphan control	Prevents widow and orphan lines. The last line of a paragraph is referred to as a widow line if it is also the first line of a new column or page. If a new page or column is triggered after the first line of a new paragraph, this line would appear alone at the end of the page or column. In this case, it is referred to as an orphan line.	True False Formula	Yes No Formula wizard
	Force wrap	If a long word cannot be wrapped, a line break will be forced after the last suitable character.	True False Formula	Yes No Formula wizard
Height (not text or RTF text).	Fixed height of the field, the content is scaled (0: no fixed height). The highest column determines the overall height of a table row.		Number Formula	Formula wizard
Fixed height (text or RTF text).	Fixed height of the field irrespective of the content. Excess text is discarded (0: no fixed height). The highest column determines the overall height of a table row.		Number Formula	Formula wizard
Blank Optimization	Leading and double spaces are removed.		True False Formula	Yes No Formula wizard
Line spacing (only with text)	Spacing between the text lines.		Number Formula	Formula wizard
Frame	Specifies the frame characteristics and margins for the individual table cells. Together with the selected font, the "top" and "bottom" cell margins determine the height of the table rows.		... Number Formula	Dialog Formula wizard

13.11 Chart Objects

Chart objects are elements of the report container.

13.11.1 Object Properties

See chapters "Common Object Properties" and "Report Container Object".

13.11.2 Special Fields

Fields	Purpose
LL.ChartObject.ArcIndex()	Returns the index of the current segment. The largest segment has index 1, the second largest has index 2 and so on.
LL.ChartObject.ArcPerc()	Returns the percentage share of the current segment.
LL.ChartObject.ArcTotal()	Returns the absolute value of the total data volume with pie charts.
LL.ChartObject.ArcTypeIsOthers()	Returns True, if the current segment is the "other" segment.
LL.ChartObject.ArcValue()	Value of the segment.
LL.ChartObject.AxisCoordinate()	Describes the content of the source value.

13.11.3 Circle/Donut

Data Source

On the "Data source" tab, you can specify the coordinate values for the data.

Property	Description	Value	Description
Coordinate value	Choose the data source for the segments (name of the customer or employee, name of the product category, month or quarter in the case of dates etc.).	Formula	Formula wizard
Minimum share	Especially if you have a lot of values that have small shares, it's sometimes a good idea to group them together under "others". You can define threshold values here which specify when individual segments are to be grouped together in one segment.	Number	Formula wizard
Sort coordinates	Specifies whether the segments are to be sorted (alphanumeric or alphabetical).	True	Yes
		False	No
		Formula	Formula wizard

Number of records for design	The Designer does not yet have the "real" data that appears in your chart when it is printed. So that you can still get a picture in the Designer preview of how your chart will look, you can use this option to specify the number of segments that are to be displayed in the Designer.		Number	Formula wizard
Filter	You can define a filter condition here. Only data records that fulfill the condition will then be used for the diagram. All data will be used if you select "True".		True False Formula	True False Formula wizard
Coordinate label	Defines the text for the coordinate label on the segment.		Formula	Formula wizard
	Fixed font size	The font size is to be fixed (otherwise it will become smaller as necessary in order to prevent overlapping).	True False Formula	Yes No Formula wizard
Coordinate label "Others"	Defines the text for the coordinate label on the segment for the data grouped as "others".		Formula	Formula wizard
Legend	Placement of the legend.			None At chart Top, Left, Right, Bottom
	Equidistant (only if placement is "bottom" or "top")	Describes, if the distance between legend entries is constant (Yes) or minimal (No).	True False	Yes No
	Border	Border of the legend.	...	Frame dialog
	Percentage for Legend	Percentage of the area of the available space for the legend. 0 means automatic calculation.	Formula	Formula wizard

Segment

The "Segment" tab lets you make settings for calculating and presenting the segment.

Property	Description	Value	Description
Coordinate	Here you specify the formula for the	Formula	Formula

value	coordinate value that determines the size of the segment (total turnover, average turnover, number of sales etc.).			wizard
Explosion offset	The individual segments are accentuated by bringing them forward out of the pie. The value describes the distance by which the segment is to be raised (as a percentage of the pie's radius).		Number	Formula wizard
Label on object	Specifies whether a label is to be output on the segment.		0	No
			1	Yes
			Formula	Formula wizard
	Content	Label text on the segment. LL.ChartObject.ArcPerc returns the percentage share of the current segment.	Formula	Formula wizard
Width	Pie width in percent.		Number	Formula wizard

Chart

The "Chart" tab lets you make settings for the appearance of the pie.

Property	Description	Value	Description
Color mode	The segments are marked in different colors so that the individual values can be differentiated more easily. Color settings by means of the "Colors" tab.	0	Monochrome Segments
		1	Colored Segments
		Formula	Formula wizard
Illuminated	Sets whether the chart should be illuminated.	True	Yes
		False	No
Inner radius	Donut diagram: Relative position of the inner donut radius (5-95%).	Number	Formula wizard
Perspective	This property lets you choose whether the diagram is to be created with a slight or a strong perspective. Alternatively, you can also use a simple parallel projection.	0	None
		1	Slight perspective
		2	Strong perspective
		Formula	Formula wizard

Perspective gradient	The perspective gradient produces a brightness gradient across the surface of the pie chart. Gradient in percent.	Number	Formula wizard
	Accentuate frame — Raise the edge of the pie	True	Yes
		False	No
		Formula	Formula wizard
Separator lines	Display separator lines between the segments.	True	Yes
		False	No
		Formula	Formula wizard
X axis rotation angle	The rotation angle upwards around the x-axis in degrees, maximum 90° (vertical). Determines the horizontal positioning of the pie. You can also specify this angle by means of the rotation buttons that appear on the workspace when you select a diagram.	Number	Formula wizard
Y axis rotation angle	The rotation angle in degrees around the center of the pie, anticlockwise. You can also specify this angle by means of the rotation buttons that appear on the workspace when you select a diagram.	Number	Formula wizard

13.11.4 Bar/Line/Areas/Bubbles

Category and Series Axes

If you have decided in favor of a three-axis diagram, you have both of these axes at your disposal (x axis and x axis). With two-axis charts (e.g. a simple bar chart), you only need the category axis (x axis).

Property	Description	Value	Description
Coordinate value	Here you choose the data source for the coordinate, e.g. "name" with persons or "month" with dates.	Formula	Formula wizard
Minimum share (only rel. stacked charts)	Especially if you have a lot of values that have small shares, it's sometimes a good idea to group them together under "others". You can define threshold values here which specify when individual segments are to be grouped together in one segment.	Number	Formula wizard

Sort coordinates	Specifies whether the coordinates are to be sorted (alphanumeric or alphabetic).		True False Formula	Yes No Formula wizard
Number of sample records	The Designer does not yet have the "real" data that appears in your chart when it is printed. So that you can still get a picture in the Designer preview of how your chart will look, you can use this option to specify the number of sample records that are to be displayed in the Designer.		Number	Formula wizard
Start and end values rounded	Sets axis start values and axis end values to round interval limits in cases where the exploited data range is not too small (at least 80% of the entire value of the axis).		True False Formula	Yes No Formula wizard
Axis label	Defines the text for the axis label.		Formula	Formula wizard
	Rotation	Rotation of the axis label in degrees.	Number	Formula wizard
Coordinate label	Defines the text for the coordinate label or the legend.		Formula	Formula wizard
	Rotation	Rotation of the coordinate label in degrees (with long texts).	Number	Formula wizard
	Fixed font size	The font size is to be fixed (otherwise it will become smaller if necessary in order to prevent overlapping).	True False Formula	Yes No Formula wizard
Legend	Placement of the legend (values differ according to type and axis).			None At Axis Top, Left, Right, Bottom
	Equidistant (only if placement is "bottom" or "top")	Describes, if the distance between legend entries is constant (Yes) or minimal (No).	True False	Yes No
	Border	Border of the legend.	...	Frame dialog
Use series to	For the series axis (y-axis) in a three-axis diagram, you can also specify the			

determine the values	values by means of series instead of formulas. This means that you define the different series (e.g. measured value/target value/actual value) with a single data record and can show them parallel e.g. in a line diagram. Select the "Use rows as data source" entry from the drop-down list above the properties. This option changes the properties of the series axis and you also have the "Series Definition" property. You define the individual series by opening the "Series Definitions" dialog. You can define the properties differently for each series and move it with the arrow buttons. The property "Calculation Type" allows to display e.g. a moving average or the aggregation of data.

Value Axis Settings

On the "Value axis" tab, you can make settings for calculating and presenting the value axis of a bar chart or line diagram.

Primary axis/secondary axis: These charts support a second value axis. The second axis is enabled on the "Diagram" tab. Use the drop-down box to switch to the properties for the respective axis.

Property	Description	Value	Description
Coordinate value	Here you specify the formula for the coordinate value (total turnover, average turnover, number of sales etc.).	Formula	Formula wizard
Axis scale	Type of axis scaling.	0	None (linear)
		1	Logarithmic, base 10 (decimal)
		2	Logarithmic, base 2 (binary)
		Formula	Formula wizard
Calculation Type	Allows to display e.g. a moving average. Not available if the values of the series axis are determined by series. Then this property is available for each series in the "Series Definitions" dialog.	0	Normal
		1	Cumulative Sum
		2	Cumulative Average
		3	Simple Moving Average
		4	Symmetrical Moving

				Average
			5	Difference to Previous Value
			6	Average
			7	Line Of Best Fit
	Number of values (only Calculation Type 3 and 4)	Number of preceding or encircling values that will be used for the calculation.	Number	Formula wizard
Maximum Value Automatic	Do you want the value axis to continue until it reaches a certain maximum value or do you want to determine the end value automatically? You can limit the maximum height of the displayed area e.g. to cater for "anomalies". If your values contain extremely high peaks, you can cap them by setting a maximum value and show the progression of the "small" values more clearly. If you keep the default value "No", the diagram will be adapted so that all values are displayed.		True False Formula	Yes No Formula wizard
	Threshold	Maximum axis value	Number	Formula wizard
Minimum Value Automatic (only Lines, Areas, Bubbles)	Do you want the value axis to start at a certain minimum value or do you want to determine the start value automatically? You can limit the minimum height of the displayed area, e.g. to cater for "anomalies". If you keep the default value "No", the diagram will be adapted so that all values are displayed.		True False Formula	Yes No Formula wizard
	Threshold	Minimum axis value	Number	Formula wizard
Label on object	Specifies whether a text is to be output on the objects.		0 1 Formula	No Yes Formula wizard
	Content	Label text on the object.	Formula	Formula wizard
Bubble Design (only	Design of the bubbles.		1	Circle

bubbles)		2	Filled Circle
		3	Filled circle with frame
		4	Light Incidence From Left
		5	Light Incidence From Above
		6	Light Incidence From Top Left
		7	Ball
		8	Glass Drop
		9	Glass Drop, Partially Trans.
		Formula	Picture-File
Presentation	Visual presentation.	1	Cylinder
	Pie, Areas, Bubbles: -	2	Bar
	Bar simple, clustered: 1, 2, 3, 8, 9	3	Pyramid
	Bar Multi-Row: 1, 2, 3, 4, 8, 9	4	Ribbon
	Bar stacked: 1, 2, 8	5	Line
	Lines: 5, 6, 7	6	Symbols
		7	Line+Symbols
		8	Octaeder
		9	Cone
		Formula	Formula wizard
Width	Bar/line width in percent	Number	Formula wizard
Coordinate lines	Specifies whether coordinate lines are to be drawn on the background.	True	Yes
		False	No
		Formula	Formula wizard
Zebra Mode	Specifies whether the background is to be output in a zebra pattern.		Transparent
			Pattern/block

				color
				Horiz. Gradient
				Vert. Gradient
				Horiz. 2-part gradient
				Vert. 2-part gradient
				Partly transparent
Axis label	Defines the text for the axis label.		Formula	Formula wizard
	Rotation	Rotation of the axis label in degrees.	Number	Formula wizard
Coordinate label	Defines the text for the coordinate label or the legend.		Formula	Formula wizard
	Rotation	Rotation of coordinate label in degrees.	Number	Formula wizard
	Fixed font size	The font size is to be fixed (otherwise it will become smaller as necessary in order to prevent overlapping).	True	Yes
			False	No
			Formula	Formula wizard
Coordinate label "Others"	Defines the text for the coordinate label on the bar for the data grouped as "others".		Formula	Formula wizard
Coordinate tick distance	Calculation of the distance between two coordinate ticks.		True	Automatic
			False	Manual
			Formula	Formula wizard
Legends	Placement of the legend for this axis.			None
				At axis
Marker Color	Color of the coordinate marker lines (tickmarks).			Color
Number of ticks	The number of subdivisions separated by tick marks between the main coordinate markings.		Number	Formula wizard

Chart

The "Chart" tab lets you make settings for the appearance of bar charts and line diagrams.

Property	Description		Value	Description
Secondary axis	Supports a secondary axis on the left hand side. The axis properties are set on the "Value Axis" tab. You select the respective axis from a drop-down box.		True	Yes
			False	No
			Formula	Formula wizard
	Axis assignment	Specifies which value axis the value is assigned to.	0	Primary axis
			1	Secondary axis
			Formula	Formula wizard
Alignment	Alignment of the graphic elements, e.g. for a horizontal bar chart.			Left to right
				Bottom to top
Axis Color	Color of the axes (or the frame with 3D-display).			Color
Illuminated	Specifies whether the chart is to be illuminated.		True	Yes
			False	No
			Formula	Formula wizard
Linear Data Axis	Sets if numeric or date values should be placed at the axis according to their value.		True	Yes
			False	No
Color mode	Specifies which axis determines the color.		0	Monochrome
			1	x axis
			2	y axis
			Formula	Formula wizard
Background color	Background behind the diagram.			Transparent
				Pattern/block color
Isotropic	Specifies that both data axes (x and y axis) use the same units.		True	Yes
			False	No
			Formula	Formula wizard

Perspective	This property lets you choose whether the diagram is to be created with a slight or a strong perspective. Alternatively, you can also use a simple parallel projection.	0	None
		1	Slight perspective
		2	Strong perspective
		Formula	Formula wizard
Projection (only for 3D charts)	For flat projections, the front axis always remains straight.	0	flat
		1	3D
		Formula	Formula wizard
X axis rotation angle	The rotation angle upwards around the x axis in degrees, maximum 90° (vertical). Determines the horizontal positioning of the diagram in the available space. You can also specify this angle by means of the rotation buttons that appear on the workspace when you select a diagram.	Number	Formula wizard
Y/Z axis rotation angle	The rotation angle in degrees around the center of the diagram, anticlockwise. You can also specify this angle by means of the rotation buttons that appear on the workspace when you select a diagram.	Number	Formula wizard
Separator lines	Display separator lines between the segments.	True	Yes
		False	No
		Formula	Formula wizard

13.11.5 Funnel

Data Source

On the "Data source" tab, you can specify the coordinate values for the data.

Property	Description	Value	Description
Coordinate value	This formula determines the coordinate value of the data.	Formula	Formula wizard
Filter	You can define a filter condition here. Only data records that fulfill the condition will then be used for the diagram. All data will be used if you select "True".	True	True
		False	False
		Formula	Formula

				wizard
Axis label	Defines the axis label text.		Formula	Formula wizard
Coordinate label	Defines the text for the coordinate label on the segment.		Formula	Formula wizard
	Fixed font size	The font size is to be fixed (otherwise it will become smaller as necessary in order to prevent overlapping).	True False Formula	Yes No Formula wizard
Legend	Placement of the legend.			None At chart Top, Left, Right, Bottom
	Equidistant (only if placement is "bottom" or "top")	Describes, if the distance between legend entries is constant (Yes) or minimal (No).	True False	Yes No
	Border	Border of the legend.	...	Frame dialog
	Percentage of Text	Percentage of the reserved area of the available space for the text.	Formula	Formula wizard

Funnel Segment

The "Funnel Segment" tab lets you make settings for calculating and presenting the section.

Property	Description	Value	Description
Coordinate value	Here you specify the formula for the coordinate value that determines the size of the section.	Formula	Formula wizard
Explosion offset	Describes the distance of the funnel segments (100% = 50% of the total height of the funnel).	Number	Formula wizard
Label on object	Specifies whether a label is to be output on the segment.	0 1 Formula	No Yes Formula wizard
	Content	Label text on the section.	Formula	Formula

				wizard

Chart

The "Chart" tab lets you make settings for the appearance.

Property	Description		Value	Description
Color mode	The funnel sectors are marked in different colors so that the individual values can be differentiated more easily. Color settings by means of the "Colors" tab.		0 1 Formula	Monochrome Funnel Segments Colored Funnel Segments Formula wizard
Illuminated	Sets whether funnel should be illuminated.		True False	Yes No
Relative Width of Funnel End	Width of the funnel end relative to the funnel start. A width of 100% results in a bar chart (pipeline).		Number	Formula wizard
	Percentage of Funnel End	Percentage of the funnel end (in percent, -100% for the length of the last funnel segment	Number	Formula wizard
Relative Width of Funnel Start	Width of the funnel start relative to the diagram size (respecting the legend if necessary).		Number	Formula wizard
Separator lines	Display separator lines between the segments.		True False Formula	Yes No Formula wizard

13.11.6 Map/Shapefile

Shapefile Selection

On the "Shapefile Selection" tab, you can specify the underlying shapefile data.

Property	Description		Value	Description
Data shapefile	This shapefile will be used for the data (coloring etc.).			
	Name	Object name.	Name	
	File name	File name		Open file

			Formula	dialog Formula wizard
	Back-ground	The fill color of a shape (might be replaced by the color defined on the 'Colors' tab).	True False Formula	Visible Invisible Formula wizard
	Border	The color of a shape	0 1 Formula	Transparent Pattern/Block Color Formula wizard
	Filter	This filter allows selecting which shapes or lines from the Shapefile shall be used for displaying. The selection can be limited using the shapes' attributes (LL.ChartObject.Shape.Attribute …' fields).	Formula	Formula wizard
	Area Selection	Select the area to display with this filter. Rectangle (with Coordinates): The displayed area will be restricted to these coordinates. For maps the typical coordinate area is -180°…180° in x- and -90°…90° in y-direction. Formula: 'True' for all information (shapes, lines) of the Shapefile data. The selection can also be limited by attributes (LL.ChartObject. Shape.Attribute…' fields).	True False	Formula Coordinates
	Centered	Centered display (only for azimuthal projection). The data will be centered according to the area selection filter.	True False Formula	Visible Invisible Formula wizard
Projection	The projection type. Only reasonable for Shapefiles with world coordinates (coordinate area -180°…180°, -90°…90°)		0 1	none Mercator (Cylindrical)

		2	Braun (Cylindrical)
		3	Kavrayskiy (Azimuthal)
		4	Sinusoidal (Azimuthal)
		5	Eckert-Greiffendorff (Azimuthal)
		6	Hammer (Azimuthal)
		7	Winkel III (Azimuthal)
Background Shapefiles	Shapefiles in this list will be placed 'behind' the data to be able to display seas or similar.		Dialog
Foreground Shapefiles	Shapefiles in this list will be placed 'over' the data to be able to display rivers or similar.		Dialog

Assignment

The "assignment" tab lets you make the reference between the attributes and the shapefile data.

Property	Description		Value	Description
Coordinate value	This formula determines coordinate value of the data.		Formula	Formula wizard
Filter	Pie width in percent.		Number	Formula wizard
Shape Assignment	The individual segments are accentuated by bringing them forward out of the pie. The value describes the distance by which the segment is to be raised (as a percentage of the pie's radius).		Number	Formula wizard
Axis Label	Axis label text.		Text	Formula wizard
Legend	Placement of the legend.	Placement of the axis´ legend.	None At chart Top, Left, Right, Bottom	
	Equidistant	Describes, if the distance	True	Yes

	(only if placement is "bottom" or "top")	between legend entries is constant (Yes) or minimal (No).	False	No
	Border	Border of the legend.	...	Frame dialog
	Percentage for Legend	Percentage of the area of the available space for the legend. 0 means automatic calculation.	Formula	Formula wizard

Value

The "Value" tab lets you make settings for the appearance.

Property	Description	Value	Description
Coordinate value	This formula determines coordinate value of the data.	Formula	Formula wizard
Label on Object	Sets the text to be displayed on the objects.	0	No
		3	Centered
		Formula	Formula wizard

Colors

Property	Description	Value	Description
Shape Legend	Define the legend of the chart here by making a fix assignment of axis values to color a text. 'LL.ChartObject.AxisCoordinate' is the result value of the current shape. Example: For the actual coloration you choose the condition "True" and the formula HeatmapColor (LL.ChartObject. AxisCoordinate, -20.40). For the discrete legend values, choose the condition "False", for the legend-text '0 F' and for the color 'HeatmapColor (0, -20.40)' etc.	Color Formula	Color dialog Formula wizard

13.11.7 Diagram Area (All Diagram Types)

On the "Diagram Area" tab you will find the settings for the title and the background.

Property	Description	Value	Description
Title	You can specify the title of your diagram here. It will then be displayed at the upper margin of the object. You can also select a	Formula	Formula wizard

	formula with the formula button. The "Font" button lets you change the font for the title. Click it with the left mouse button to open a font selection dialog; a right-click resets the font to the default value for the object.			
Title Position	Position of the diagram's title.		0	Top
			1	Bottom
			2	Top, Centered
			3	Bottom, Centered
			Formula	Formula wizard
Background	Select the color that you want to use for the background of the available area. You can also make it transparent. You can select a color in the upper drop-down box or click "..." to open a standard color selection dialog.		True	Yes
			False	No
			Formula	Formula wizard
	Filling	Filling for the available area		Transparent
				Pattern/block color
				Horiz. Gradient
				Vert. Gradient
				Horiz. 2-part gradient
				Vert. 2-part gradient
				Partly transparent
				Picture
	Border	Border for the available area		Transparent
				Pattern/block color
	Shadow	Shadow for the available area		Transparent
				Pattern/block color
	Rounding	Rounding factor in percent for the corners of the available	Number	Formula wizard

	area: 0=rectangular (square corners), 100=elliptical (short edge is round)		

13.11.8 Colors (All Diagram Types without Shapefiles)

Property	Description	Value	Description
Design Scheme	Specifies the colors and color sequences for the data rows that are not specified by the "Fixed Colors". You can select a predefined color set from the drop down list. These colors can still be adjusted in the properties.	Color	Color dialog
Fixed Colors	You can assign fixed colors to particular axis values. If you click the "New" button, you can create a new assignment e.g. Customers.Country = "Germany".	Color	Formula wizard

13.12 Crosstab Objects

Crosstab objects are elements of the report container.

13.12.1 Object Properties

See chapters "Common Object Properties" and "Report Container Object".

13.12.2 Special Functions

Function	Purpose
Crosstab.Cells.Max() or Crosstab.Cells.Min()	Returns the largest or smallest value in the entire crosstab.
Crosstab.Cells.Avg()	Returns the average value for the entire crosstab.
Crosstab.Col$() or Crosstab.Row$()	Returns the description of the column or the row for the current cell.
Crosstab.Value()	Returns the content of the cell (as a number).
Total()	You can use this function for calculations across all cells. Otherwise, calculations are always made across all values that affect the respective cell.
Join$()	Returns a collection of strings, separated by a particular character.

13.12.3 Cell Properties

Select the respective column in the object dialog on the "Cell definition" tab. To select multiple cells, hold down the CTRL key or you can draw a border around the cells with the mouse.

Property	Description		Value	Description
Value	Formula for the value of the cell. This will be evaluated by the Crosstab.Cells functions.		Formula	Formula wizard
Displayed contents	Text to be displayed in the cells. This can differ from the value specified in the "Value" property, e.g. if it is formatted.		Formula	Formula wizard
Link URL	Link that is accessed when clicked (only real data preview, PDF or HTML export). Example: file://c:\users\public\x.log or URL		Link	Link Formula wizard
Rotation	Rotates the object anticlockwise. For example, you can rotate the column title by 90° with this function.		0 1 2 3 Formula	0° 90° 180° 270° Formula wizard
Vert. alignment	Vertical alignment of the content in the available space.		0 1 2 Formula	Top Centered Bottom Formula wizard
Alignment (text)	Text alignment Decimal means that numbers are aligned by their decimal points.		0 1 2 3 Formula	Left Centered Right Decimal Formula wizard
	Decimal position	Position of the decimal point (only valid with decimal alignment, negative means: from the right.)	Number Formula	 Formula wizard
Appearance Condition (only	Before Entries	Sets wether the summary is to be output before or after the	True False	Yes No

summary cell)	data line.	Formula	Formula wizard
Blank Optimization	Leading and double spaces are removed.	True	Yes
		False	No
		Formula	Formula wizard
Limit To (only result cell)	Limits the number of entries on this level to the defined number (Top-N report in combination with sort order by result.	Number	Entries
		Formula	Formula wizard
Maximum width	Specifies the maximum width for a cell. A line break will be triggered if the text is wider. You can use this property in combination with the Join$() function to display the individual values in one cell.		
Minimum height	Sets the minimum height for the type of cell.	Number	
		Formula	Formula wizard
Minimum width	Sets the minimum width for the type of cell.	Number	
		Formula	Formula wizard
Sort Order (only Axis Definition)	Sets sort order to be either ascending or descending.	0	Ascending
		1	Descending
		2	Unsorted
		3	Result Ascending
		4	Result Descending
		Formula	Formula wizard

13.12.4 Properties for the Crosstab Area

Property	Description	Value	Description
Link URL	Link that is accessed when clicked (only real data preview, PDF or HTML export). Example: file://c:\users\public\x.log or URL	Link	Formula wizard
Minimum size	Specifies the minimum size to which the crosstab may be reduced in order to avoid a	Number	Formula wizard

	horizontal page break. 50=reduced by up to 50% to avoid a page break; 100=keep original size.			
Minimum height	Specifies the minimum height that must be available for the object. A page break will be triggered if less space is available.		Number	Formula wizard
Columns	Specifies the column properties in the event of a page break		Formula	Formula wizard
	Repeat labels	Specifies whether row labels are to be repeated if there is a column break.	True False Formula	Yes No Formula wizard
	Page Break on Shadow Pages	True: If the cross table is too wide, the wrapped parts are printed on shadow pages. A shadow page does not count as a "real" page and therefore does not have a page number. False: The wrapped parts are output below the table.	True False Formula	Yes No Formula wizard
	Distance before	Distance from the previous element.	Number Formula	 Formula wizard
	Break level	Specifies the ideal break level. 0=inner group, i.e. the bottom line of the column definitions.	Number Formula	 Formula wizard
	Force	Forces a break after each corresponding group.	True False Formula	Yes No Formula wizard
Rows	Repeat labels	Specifies whether column labels are to be repeated if there is a line break.	True False Formula	Yes No Formula wizard
	Break level	Specifies the ideal break level. 0=inner group, i.e. the bottom line of the line definitions.	Number Formula	 Formula wizard
	Force	Forces a break after each corresponding group.	True	Yes

	False	No
	Formula	Formula wizard

13.13 Gantt Chart

Gantt Charts are elements of the report container.

13.13.1 Object Properties

See chapters "Common Object Properties" and "Report Container Object".

13.13.2 Special Fields

Fields	Purpose
LL.GanttObject.CurrentBarLabel	Returns the bar label of the current bar.
LL.GanttObject.CurrentProjectDepth	Returns the index of the current Summary Task.

13.13.3 Content

Property	Description	Value	Description
Summary Task Name	Field or formula for the name of a summary task This setting is a mandatory field. If you do not want to display any summary tasks, enter the same value in this field as for "Task Name".	Formula	Formula wizard
Task Name	Field or formula for the name of a task (Mandatory field).	Formula	Formula wizard
Start	Field or formula for the starting time of a task. It is automatically set to the start of the first task for summary tasks (Mandatory field).	Formula	Formula wizard
End	Field or formula for the end time of a task. It is automatically set to the end of the last task for summary tasks. The task is interpreted as a milestone if the end time equals the start time and the duration is 0 (Mandatory field).	Formula	Formula wizard
Duration	Field or formula for the duration of a task (in days). It is automatically calculated by the date difference for summary tasks.	Formula	Formula wizard
Progress	Field or formula for the progress of a task (in percent).	Formula	Formula wizard
Bar Label	Field or formula for the bar label of the task.	Formula	Formula wizard

Regard Time	Defines if the given start and end values are exact (start=end corresponds to 0 days) or should be calculated in days (start=end correspond to 1 day).		True False	Yes No
Title Line	Properties of the title lines			
Summary Task Rows	Properties of the summary task rows.			.
	Row Properties	See Task Rows		
Task Rows	Properties of the task rows.			
	Row Properties			
	Rounding	Rounding of the bar.	Formula	Formula wizard
	Bar height (Finished)	Bar height of the finished fraction of the task in percent of the row height. (0: don't show bar)	Formula	Formula wizard
	Bar height (Unfinished)	Bar height of the unfinished fraction of the task in percent of the row height. (0: don't show bar)	Formula	Formula wizard
	Filling (Finished)	Properties of the bar filling for the finished fraction of the task.	See chapter "Common Object Properties"	
	Filling (Unfinished)	Properties of the bar filling for the unfinished fraction of the task.	See chapter "Common Object Properties"	
Table Area	Defines the table area displayed in the Gantt Chart.			
	Index/ Name/ Start/ End/ Duration/ Progress	Defines if a continuous index for (summary) tasks / the task name / the task start / the task end / the task duration / the task progress is displayed.	True False	Show Don't Show
Chart Area	Defines the period.			
	Start Time/Date	Defines the start time or the start date.	Null() Formula	Automatic Formula wizard

	End Time/Date	Defines the end time or the end date.	Null()	Automatic
			Formula	Formula wizard
	Time Unit	Defines the time unit	1	Decades
			2	Years
			3	Quarters
			4	Months
			5	Weeks
			6	Days
			7	Hours
	Format	Defines the format of the time unit.	Format	Formula wizard
	Highlighted Days	If the time unit is 'Days' or 'Weeks', you can select here if and which days should be highlighted. The value is a comma-separated list, 1=Monday, 7=Sunday (e.g. "6,7")	Comma-separated list	Formula wizard
	Superordinate Time Unit	Defines the superordinate time units.	0	Centuries
			1	Decades
			2	Years
			3	Quarters
			4	Months
			5	Weeks
			6	Days
	Minimum Width	The minimum width of a time interval cell.	Formula	Formula wizard
Range Marker	You can mark the point in time or a range here.			
Grid Mode	For monochrome printers that have problems displaying gray lines the black and white mode for printing to a black and white printer can be enabled.		0	Off
			1	Gray
			2	Black/White
Link URL	Link that is accessed when clicked (only real data preview, PDF or HTML export).		Link	Link
				Formula

	Example: file://c:\users\public\x.log or URL		wizard
Distance before	Distance between the diagram blocks for a horizontal break.	Formula	Formula wizard
Minimum Height	Sets the minimum height required for the object. If less space is available, a page break is triggered.	Formula	Formula wizard
Page Break on Shadow pages	If the object is too wide, the remaining contents will be printed on shadow pages. A shadow page does not count as a "real" page and therefore does not have a page number. False: The wrapped parts are output below the table.	True False Formula	Yes No Formula wizard
	Repeat labels: Sets whether the row labels are to be repeated in case of a horizontal page break.	True False Formula	Yes No Formula wizard
Break evenly	Defines if a horizontal break is made at the borders of the superordinate time interval if possible.	True False	Yes No

13.14 Gauge Objects

Gauges can be placed in table lines or as an object.

13.14.1 Object Properties

See chapter "Common Object Properties".

13.14.2 Content

You define the appearance of the gauge on the "Content" tab.

Property	Description	Value	Description
Background	Filling properties (background of the gauge).		
	Color. Color of the background.		Color
	Fading-in factor. Value ranging from 0 (transparent) to 100 (opaque).	Value	Formula wizard
Pointer options			
	Color. Color of the pointer.		Color
(only linear Gauge)	Background.		

(only speedo)	Size factor. Specifies the size of the pointer in relation to the scale range.	Value	Formula wizard
	Display Range. Describes the percentage range of the available area (the radius or the width) in which this element is displayed.	Value	Formula wizard
Glass properties			
	Color. Glass color.		Color
	Fading-in factor. Value ranging from 0 (transparent) to 100 (opaque).	Value	Formula wizard
Length/width ratio (only linear Gauge)	Specifies the length/width ratio for the linear gauge. The bigger the value, the smaller it will be drawn in the available space.	0 1 -5	area-filling 1:1 - 5:1
Scale range rotation angle	Clockwise rotation angle for the scale (0°= down).	Value	Formula wizard
White space before scale range	Specifies the free space between the beginning of the gauge and the beginning of the scale (max. 50%).	Value	Formula wizard
White space after scale range	Specifies the free space between the end of the gauge and the end of the scale (max. 50%).	Value	Formula wizard
Tickmarks	Scale type	0 1 2 3	None Scale type 1 Scale type 2 Scale type 3
	Display range. The "Minimum" and "Maximum" values describe the percentage range of the available area for the tickmark.	Value	Formula wizard
	Color. Color of the tickmark.		Color
	Tickmark width. Specifies the width of the scale tickmark (percentage value).	Value	Formula wizard
	Detail level. Specifies the maximum tickmark level to be output. 0=top level only.	Value	Formula wizard
	Filling.		
	Intermediate tick position. Specifies where the intermediate tickmarks are to be placed.		
	Calculation type. Calculation type of the	True	Automatic

	coordinate tickmark distance (ticks).	False	Manual
		Value	Formula wizard
	Distance. The user-defined distance between two coordinate ticks.	Value	Formula wizard
Scale labels	Scale label properties.	True	Show
		False	Hide
	Display range. The "Minimum" and "Maximum" values describe the percentage range of the available area for the tickmark.	Value	Formula wizard
	Rotated. Specifies whether the font is rotated.	True	Yes
		False	No
	Size adjustment. Specifies whether the font size may be reduced so that the lettering fits the area.	True	Yes
		False	No
	Alignment. Text alignment.	0	Left
		1	Centered
		2	Right
		Value	Formula wizard
Signal ranges	The properties of the signal ranges. You can give the ranges different colors, e.g. to signalize an optimum range. You define the start value, start color, end value and end value of the different ranges in a dialog.	True	Show
		False	Hide
		...	Dialog
	Display range. The "Minimum" and "Maximum" values describe the percentage range of the available area for the tickmark.	Value	Formula wizard
Scale Labels	List of labels. You can open a dialog to define the rotation, frame size, background, font, format and position of the individual labels. You specify the position in relation to the area of the gauge (measured from left to right). For example, a vertical and horizontal position of 50% each will position the label precisely in the middle.	True	Show
		False	Hide
		...	Dialog
Minimum value	Minimum value of the scale. Calculated e.g.	Value	Formula

	with Precalc().		wizard
	Fit to distance The minimum value is adjusted automatically to fit the coordinate tickmark distance.	True False	Yes No
Maximum value	Maximum value of the scale. Calculated e.g. with Precalc().	Value	Formula wizard
	Fit to distance The maximum value is adjusted automatically to fit the coordinate tickmark distance.	True False	Yes No
Start value	Defines where the bar for displaying the value starts. 'Automatic' means: if the scale is exceeding 0, it is 0, otherwise it is the minimum value.	True False	Automatic Manual
Value	Value to be indicated by the pointer.	Value	Formula wizard

13.15 Data Graphic

Data Graphics can be placed in table lines or as an object.

13.15.1 Object Properties

See chapter "Common Object Properties".

13.15.2 General

Property	Description		Value	Description
Value	Value displayed in the data graphic. Defines the bar length and/or the symbol.		Value	Formula wizard
	Visible	The value is also displayed as text.	True False	Yes No
Minimum Value	Minimum Value (corresponds to 0% for percentage scaling).		Value	Formula wizard
Maximum Value	Maximum Value (corresponds to 100% for percentage scaling).		Value	Formula wizard

13.15.3 Bar Properties

Property	Description	Value	Description
Rounding	Rounding of the bar.	Value	Formula wizard
Alignment	Alignment of the bar	0	Left

			1	Centered
			2	Right
			3	Originating from the baseline to the left or right
	Base Value (Alignment = 3)	Below this value the bar is running to the left, above to the right.	Value	Formula wizard
	Base Line	The base line is displayed.	True	Yes
			False	No
Vertical Alignment	Vertical Alignment		0	Top
			1	Centered
			2	Bottom
			Value	Formula wizard
Bar Height	Height of the bar (0: no fixed height).		Value	Formula wizard
Ranges	Defines how the value ranges for the data graphic are defined.		True	Automatic
			False	User Defined Ranges
	List	List with value ranges for the bar color assignment.	...	Dialog

13.15.4 Symbol-Properties

Property	Description	Value	Description
Alignment	Alignment of the symbol	0	Left
		1	Centered
		2	Right
		Value	Formula wizard
Vertical Alignment	Vertical Alignment	0	Top
		1	Centered
		2	Bottom
		Value	Formula

				wizard
Symbol Group	Desired symbol group.			List
Symbol Height	Height of the symbol (0: no fixed height).		Value	Formula wizard
Ranges	Defines how the value ranges for the data graphic are defined.		True	Automatic
			False	User Defined Ranges
	List	List with value ranges for the symbol assignment.		Dialog

13.16 Checkbox Objects

Checkboxes can be placed in table lines or as an object.

13.16.1 Object Properties

See chapter "Common Object Properties".

Property	Description		Value	Description
Picture for 'True', 'False' or 'NULL'	Sets how the 3 checkbox states should look line if the calculation of the content formula returns true/false/NULL.		0	No Picture
			1	Internal Pic.
			2	External Pic.
	Internal Source	Selected internal picture.	List	Picture
		Frame Color.		
		Icon Color.		
	External Source	Source of the external picture.		File name
				Formula
				Variable

13.17 Formatted Text Objects

As opposed to the normal text object, with this object, you can also change the formatting of the text within a line.

Formatted Text objects should always be created in the maximum size you want, the object shrinks at print time to the required size. This behavior is particularly useful for linking objects.

Note that Windows converts embedded pictures in Formatted Text Objects (inserted e.g. via the clipboard) to bitmaps. To minimize the file size, we suggest using a

picture object directly and linking it to the formatted text – this object supports image compression.

A right-click menu provides various formatting options (e.g. Superscript, Subscript).

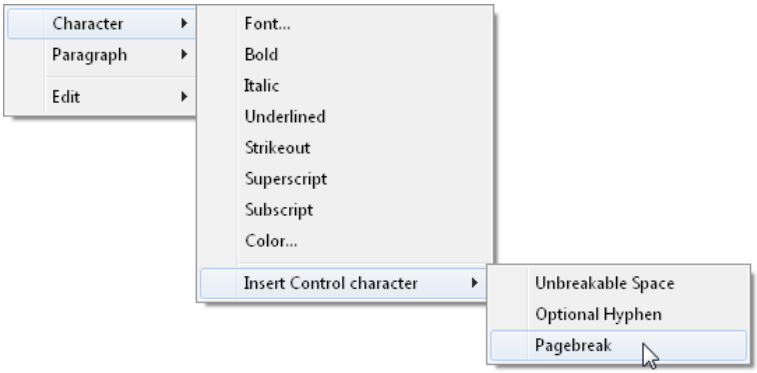


Figure 13.8: Context menu

Note: Normal text objects can be printed considerably faster. You should therefore only use formatted text objects if you need particular formatting that you cannot achieve - or cannot achieve without difficulty - in normal text objects.

13.17.1 Object Properties

Also see chapter "Common Object Properties".

Property	Description	Value	Description
Rotation	Rotates the object anticlockwise.	0	0°
		1	90°
		2	180°
		3	270°
		Formula	Formula wizard
Page break	Specifies whether the object can trigger a page break or a text overflow. If this property is enabled, the content will be wrapped to the next page automatically (or to another interlinked RTF object) if it exceeds the size of the object. This is an interesting option e.g. with RTF objects that are to cover several pages. With labels, the next label will only be started when all objects have been printed as a result of this option in the	True	Yes
		False	No
		Formula	Formula wizard

	previous label. You might not be able to set this property if page breaks are not supported by the higher-level program.		

13.18 Form Control Objects

The user can fill out form control objects directly in the preview and in the PDF format. He can also trigger actions such as send by email. You control the element's basic behavior by selecting a type. The properties that you have at your disposal change depending on the type that you select. Formula objects can also be inserted into table columns.

Also see chapter "Common Object Properties".

Property	Description	Value	Description
Type	Specifies the type of the element.	0	Edit
		1	Checkbox
		2	Combobox
		3	Button
Tooltip	Tooltip that is to appear		

13.18.1 Edit

Property	Description	Value	Description
Force input	Specifies whether the user must make an entry.	True	Yes
		False	No
		Formula	Formula wizard
Field name	Specifies the field name for a possible data export via XML/XFDF. Free text must be enclosed in quotation marks.		Name
Validation expression	Regular expression for validating the input. Examples: Field not empty: ".+" Simple email validation: "^.+@.+\..{2,3}$"		Formula wizard
	Error message: Message to be displayed if validation fails.		Formula wizard
Value	Default value for the input field.		Formula wizard
Alignment	Text alignment.	0	Left

(text)			1	Centered
			2	Right
			Formula	Formula wizard
Background	Specifies whether the field is to have a colored background.		0	Transparent
			1	Color
			Formula	Formula wizard
	Color	Background color		
Multi-line	Specifies whether the input field can consist of multiple lines. If you select single-line, more characters can still be entered and the input field scrolls automatically. However, in this case, the excess characters will be truncated when the field is output.		True	Yes
			False	No
			Formula	Formula wizard
Border	Specifies whether the object is to have a border.		True	Yes
			False	No
			Formula	Formula wizard
	Color	Color of the border.		
	Width	Width of the shadow, in the unit of measure of the workspace.	Number	
			Formula	Formula wizard

13.18.2 Checkbox

Property	Description	Value	Description
Field name	Specifies the field name for a possible data export via XML/XFDF. Free text must be enclosed in quotation marks.	Formula	Name
Value	Default value for the input field.		
Background	See edit type		
Border	See edit type		
Type	Appearance of the checkbox.	1	Tick
		2	Cross
		3	Filled
		Formula	Formula

			wizard

13.18.3 Combobox

Property	Description	Value	Description
Force input	Specifies whether the user must make an entry.	True	Yes
		False	No
		Formula	Formula wizard
Items	Default entries available in the combobox	List	List of items for selection
Field name	Specifies the field name for a possible data export via XML/XFDF. Free text must be enclosed in quotation marks.	Formula	Name
Validation expression only with variable text.	Regular expression for validating the input. Only available when Editable=yes.		Formula wizard
	Error message: Message to be displayed if validation fails.		Formula wizard
Editable	Specifies whether the user may enter other values that are not included as selection items.	True	Yes
		False	No
		Formula	Formula wizard
Value	Default value for the input field.		Formula wizard
Alignment	See edit type		
Background	See edit type		
Border	See edit type		

13.18.4 Button

For PDFs, only value 4 is supported.

Property	Description	Value	Description
Action	Specifies the possible behavior. Only available with buttons. 0: Send as mail: You can set default values for the normal email-relevant fields. 1: Save: Saves the preview file or the input data in the chosen format.	0	Send as mail
		1	Save
		2	Send via HTTP POST
		3	Link

	2: Send: via HTTP POST 3: URL: Internet address to be accessed when clicked. The object is transparent which means that you can place it on top of other objects to create links for all objects. 4: This will render as a signature field in your resulting PDFs (only for PDF).	4	PDF signature field
Text	Button label	Formula	Formula wizard

13.19 HTML Text Objects

HTML objects are used for displaying HTML content.

For rendering HTML content a separate component is used that supports a limited set of CSS properties. JavaScript is not supported. The correct reproduction of entire web pages is not the main focus, but rather the ability to quickly and easily output simple HTML streams.

13.19.1 Object Properties

See chapter "Common Object Properties".

13.19.2 Object Content

Property	Description
File	Choose this option if you want to display the content of a HTML file that you have saved. The "Open" button displays a file selection dialog with which you can locate the file that you want. The file must be located on a local drive or network.
URL	This option lets you display the content of web sites (e.g. www.combit.net). These web sites are loaded from the Internet or intranet online during run time, which means that you must always have an active Internet connection.
Formula	If your application provides certain content in HTML format, you can also select it here. In this case, please consult the documentation for your application.
Fit to object	If you enable this option, the entire content of the object will be adjusted to fit the size of the object. Otherwise, the width will be adjusted and the output will be spread across several pages.

13.20 PDF

The PDF Object is for displaying PDF documents.

- If possible, the standard printer in the system is used to publish PDFs in EMF format. The quality can therefore be improved as needed if the standard printer has a sufficiently high resolution.
- Unique feature of a PDF object inside a table when a variable line height (height = 0) is configured: The same height will be used for all pages in the PDF document. In this instance, the first page to be printed in the PDF document (can be specified via the "Page Range" setting) will be checked. If this page fits inside the line then the height will also be used for the following pages. If the height does not fit, then the PDF object will, in some cases, be displayed "shrunken".
- Transparence: If the PDF object is used outside of a table then it will always be transparent. Inside the table a background is supported.
- So that the PDF object can also display an encrypted PDF document, a potential mandatory password must be correct. In addition, the "Printing Allowed" permission must be defined in the PDF document. Otherwise the PDF object will not be able to display the defined PDF document.

13.20.1 Object Properties

See chapter "Common Object Properties".

13.20.2 Object Content

Property	Description		Value	Description
Data Source	Source of the PDF file.		File	Formula wizard
	File name	Fixed file name: is evaluated if you have selected "File name" as the data source property. You then select the file by means of the file selection dialog.		Open file dialog
	Relative Path	Relative path	True	Yes
			False	No
	Formula	If you have selected "Formula" as the data source property, the file name is derived from a formula. The formula must return a PDF-file.	Formula	Formula wizard
	Include in Project	The PDF will be embedded in the project.	True	Yes
			False	No

				Formula	Formula wizard
	Page Range(s)	The displayed PDF pages can be defined. A comma-separated list can be defined as a formula, e.g. '1,3-4,10-'.		"1-."	All Pages
				Formula	Formula wizard
	Password	If the PDF is password protected the password can be entered here.		Formula	Formula wizard
	Original Size	Sets whether the PDF is rendered in its original size or fit to the object.		True	Yes
				False	No
				Not Defined	Not Defined
		Keep Proportions	Selects whether the PDF is displayed with its true proportions or not.	True	Yes
				False	No
				Formula	Formula wizard
		Alignment	Sets the alignment of the PDF within the object's frame.	0	Centered
				1	Tiled
				2	Left Top
				3	Left Bottom
				4	Right Top
				5	Right Bottom
				6	Left
				7	Right
				8	Top
				9	Bottom
	Pagebreak	Selects whether the object can trigger a pagebreak. True: All pages of the PDF file will be printed. False: Only the first page set in "Page Ranges" will be printed and repeated on all following pages.		True	Yes
				False	No
				Formula	Formula wizard
	Font handling	Define how fonts will be handled. The option "as outlines" is useful if the font is		0	Windows Font Mapping

	not available on the target system. When enabled, the preview file may be larger and search in the preview cannot be used.	1	as outlines
		2	Use embedded fonts
		Formula	Formula wizard

13.21 OLE Container

OLE containers are used for including OLE Server Documents in your project.

13.21.1 Object Properties

See chapter "Common Object Properties".

13.21.2 Object Content

For the content, there are three options available:

- Filename: Link to a file that needs to be available at print time.
- Embedded: You select the object type via the standard Windows dialog "Insert Object". Here you can choose an existing file ("Create from File") or create a new file. The object will be embedded in the project. This can be useful e.g. for simple drawings or rather static objects.
- Formula: Allows a formula for the file name.

13.22 Form Template Objects

Form templates are placed in the background of the workspace as a template so that other objects can be aligned to them. This is helpful when designing complex forms based on templates. The form template is a special case as it is not printed.

13.22.1 Object Properties

Property	Description		Value	Description
File name	Choose the file containing the form template that you want.			Open file dialog
	Relative path	The path is relative to the project path.	True	Yes
			False	No
Visible in preview	Specifies whether the template is to be visible in the preview.		True	Yes
			False	No
			Formula	Formula wizard

Fade color	The selected color will be linked with “or” to the template image in order to lighten the image when displaying.		Color dialog Predefined colors and formula wizard
Keep proportions	Selects whether the Template is displayed with its true proportions or not.	True False Formula	Yes No Formula wiz.

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